DOCUMENT RESUME

ED 247 538 CS 007 735

AUTHOR Enright, Gwyn, Ed.
TITLE Learning Assistance: Charting Our Course. Proceedings of the Annual Conference of the Western College Reading Association (11th, Long Beach, California, March 16-19, 1978). Volume XI.
INSTITUTION Western Coll. Reading Association.
PUB DATE 78
NOTE 180p.
AVAILABLE FROM Western College Reading and Learning Association, P.O. Box 4576, Whittier, CA 90607 ($7.00).
PUB TYPE Collected Works - Conference Proceedings (021)

EDRS PRICE MF01/PC08 Plus Postage.
DESCRIPTORS *Basic Skills; Content Area Reading; Developmental Programs; Higher Education; *Learning Laboratories; Nontraditional Students; Paraprofessional School Personnel; Reading Difficulties; *Reading Instruction; Reading Programs; *Reading Skills; *Remedial Instruction; Remedial Reading; Skill Development; *Study Skills; Teaching Methods; Writing Instruction
IDENTIFIERS Piaget (Jean)

ABSTRACT

The articles in this collection focus on learning assistance and other components of college reading instruction. The topics of the 35 articles include the following: (1) charting a realistic course for learning assistance, (2) modern measurement technology, (3) a national survey of learning assistance evaluation, (4) students' cognitive functioning as an important factor in readiness to learn, (5) reading programs and materials in college content areas, (6) writing apprehension, (7) the implications of Piaget's theory of formal operations in college reading programs, (8) innovative reading strategies for the deaf, (9) psycholinguistic implications regarding the development of reading rate, (10) a mastery learning approach to college reading and study skills, (11) using a portfolio to personalize a course in academic reading, (12) readability's usefulness for developmental composition, (13) a self-paced college developmental reading program using the Personalized System of Instruction (PSI), (14) using subject area paraprofessionals, (15) teaching reading for survival, (16) a workable college reading diagnostic service, (17) a basic skills program for nontraditional college students, (18) learning assistance for inmates in a federal correctional institution, (19) the selection and training of student paraprofessionals in a learning assistance center, and (20) an adjunct course to integrate reading and study skills in a college classroom. (HTH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED247538

PROCEEDINGS OF THE ELEVENTH
ANNUAL CONFERENCE
OF THE

WESTERN COLLEGE READING ASSOCIATION

READING
LEARNING ASSISTANCE
DEVELOPMENTAL EDUCATION
TUTORIAL SERVICES

VOLUME XI

LEARNING ASSISTANCE: CHARTING OUR COURSE

Editor
Gwyn Enright
San Diego City College

Editorial Advisory Committee

William Carnahan
El Camino College

Ramona Fusco
California State University, San Francisco

William Oaksford
University of British Columbia

Guy D. Smith
Santa Barbara City College

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Delryn R. Fleming

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

CS007735

PROCEEDINGS OF THE
ELEVENTH ANNUAL CONFERENCE OF THE

WESTERN COLLEGE READING ASSOCIATION

Theme:
LEARNING ASSISTANCE: Charting Our Course

March 16-19, 1978
R. M. S. Queen Mary Long Beach, California

Host Institutions
California State University, Long Beach
El Camino College
University of California, Irvine
University of California, Los Angeles
University of Texas at Austin

WCRA OFFICERS 1977-1978

President
Margaret Coda-Messerle
California State University, Long Beach

President-Elect
Patricia Heard
University of Texas at Austin

Secretary
Mike McHargue
Foothill College

Treasurer
Seymour S. Prog
Rio Hondo College

Coordinators of State Directors
June Dempsey
San Joaquin Delta Community College
W. Royce Adams
Santa Barbara City College

Newsletter Editor
Carol Scarafiotti
Maricopa Technical Community College

PREFACE

The following pages contain twenty-seven articles and eight abstracts selected for publication in the WCRA *Proceedings* by the five person editorial team. All of these were presented at the Eleventh Annual Conference of the Western College Reading Association held March 16-18, 1978, on board the *Queen Mary* in Long Beach, California. They include a potpourri of ideas, strategies, descriptions and studies that reflect WCRA's diverse membership and that go beyond any traditional notion of "reading": an update on criterion referenced measurement by Jim Popham; a survey on content area reading and one of Learning Assistance Center evaluation; prescriptions for serving the deaf, the adult, the writing apprehensive, and the incarcerated; and program descriptions that document attempts and successes in linking learning assistance to academic areas and in coordinating the Learning Assistance Center or Reading and Study Skills Center with academic departments on campus.

Gwyn Enright
9/18/78

TWELFTH ANNUAL CONFERENCE
WESTERN COLLEGE READING ASSOCIATION
April 7 — 10, 1979
Honolulu, Hawaii

Post Conference Institutes
April 11 — 15, 1979
Kailua-Kona, Hawaii

CONTENTS

Keynote Address

Learning Assistance: Charting Our Course Within Reach
June Dempsey 1

Modern Measurement Technology: Miracle or Mirage?
W. James Popham 12

Investigations

Psycholinguistics in Rapid Reading
Lorraine M. Boothe and Ann E. McIver 15

A National Survey of Learning Assistance Evaluation: Rationale, Techniques, Problems
Carol Clymer 21

Your Students' Cognitive Functioning: An Important Factor in Readiness to Learn
Elaine Landau Cohen and David A. Smith-Gold 31

A Survey of Reading Programs and Materials in Content Areas in Higher Education
Craig K. Mayfield 35

Program Prescriptions

Writing Apprehension
Jo Ann Cope 53

The Implications of Piaget's Theory of Formal Operations in College Reading Progams
Norma Inabinette and Pam Conlon 58

The Teacher Teaches Thinking Skills: Dx and Rx for Students' Self Talk
Joan M. Matthews 65

Innovative Reading Strategies for the Deaf
George Natonick 71

Socrates in Adult Basic Education or the Art of Questioning
Horst G. Taschow 77

Psycholinguistic Implications Regarding the Development of Reading Rate
Keith J. Thomas 83

A Mastery Learning Approach to College Reading and Study Skills
Gerard Giordano and Sharon Wooden 88

The Job: To Get Mental Wheels to Roll
Leon E. Williamson 89

Applications

Using a Student Portfolio to Personalize a Course in Academic Reading
Ann Peterson Coil 90

Fernald Revisited
Betty L. Heinze 96

Intelligent Video Disc as A Major Component of Individualized Instruction
Richard E. Ingalls 102

Readability's Usefulness for Developmental Composition
Dennis J. Konshak 105

Developing and Measuring Mature Syntax
Barbara Tomlinson and Marcia Straehley 111

A Self Paced College Developmental Reading Program Using PSI (Personalized System of Instruction)
Nancy Steiner and Ladessa Yuthas 168

Program Descriptions

Innovative Instruction Symposium Report
Ann Peterson Coil 119

The UNC Reading-Writing in the Content Fields Program Bridges the Gap between Language and Content
Myrna Compton and Robert A. Pavik 124

A Multi-Media Training Program for Practitioners of the SR/SE
Sally Garcia 129

An Attempt to Teach Reading and Writing Skills in Conjunction with a Beginning Biology Course for Majors
Wayne R. Herlin 134

Subject Area Paraprofessionals: A Team Approach
David R. Hubin and Linda C. Martin 137

Reading for Survival or How to Teach Your Students to Function in Society
Bobby M. James 143

A Subject Area Specific Approach to Teaching Critical Thinking
Linda Martin 148

A Workable College Reading Diagnostic Service
Sandra Schulman 152

How to Build a Basic Skills Program for a Non Traditional College — And Live to Tell It
Ann McDonald Turl and Marla McClurg-Lonero 156

Learning Assistance for Inmates in a Federal Correctional Institution
Donna Wood 161

Time Management Techniques for Returning Women
Susan Brown and Karen G. Smith 168

The Selection and Training of Student Paraprofessionals in a Learning Assistance Center
D. Johnson, R. Roy, and C. Witherspoon 169

One-to-One: An Individualized Approach to Developmental Writing
Patricia M. F. Johnson and Shirley D. Sykes 170

Using a Group Jigsaw Technique to Teach Developmental Reading Skills
Norma V. Spalding 171

Report on an Adjunct Course to Integrate Reading and Study Skills in a University Academic Class
Margaret Macy Wilson 172

LEARNING ASSISTANCE: CHARTING OUR COURSE WITHIN REACH

June Dempsey
San Joaquin Delta Community College

Today's community colleges exemplify education's attempts to be within reach. Dr. Dale Parnell (36) of San Joaquin Delta College lauded the uniqueness of the American junior or community college in its attempts to be geographically, financially, psychologically and academically accessible to the 70 to 75 percent of the population who for varied reasons do not seek their post-secondary learning experiences in a four-year college or university. In fact, the community college decided the moot question, "Who shall be educated and for what?" (32:2) The people of California ended the debate by demanding that college doors be opened to all potential educational consumers in the community and that programs be designed to meet their educational expectations. Community college educators were immediately faced with the twofold challenge of providing what the consumers wanted and helping them to overcome the barriers of age, sex, deficient prior educational experience and low socioeconomic status.

Developmental programs

The parallel of the development of community college education and developmental education programs in colleges and universities through the nation is noteworthy. These programs with varying titles — Learning Center, Learning Assistance Center, Learning Resources Center, Reading/Writing Lab, and Tutorial Center, to name a few — are also new on the American education scene, the majority coming into existence after 1970. (15:73) In keeping with their youthfulness and diversity, they embraced innovation and daring as their destiny and welcomed the challenge of the low-achiever, ill-prepared, learning disabled, linguistically different and culturally divergent.

Faculty who found their way from English departments, remedial read-

ing classrooms and counseling centers into low seniority, many times non-tenured learning center positions, seemed to celebrate the diversity of their non-traditional clientele and take pleasure in validating the premise that "there resides in every human community certain talents, potential abilities, and capacities which — given guidance, training, and disciplined knowledge — can be put to work for the benefit not only of the individual but also of the entire community." (5:16)

What I am applauding and affirming is the creative psyche of learning center personnel exemplified by their dedication, ingenuity, flexibility and positive outlook. Perhaps these mavericks of the academic community who like Thoreau have cast conformity behind them and stepped to a different beat were drawn to the needs of the new learners because of a response to the idealistic themes of commencement addresses, the desire to return to the Greek vision of creating a community, *Koinonia*: empathetic spiritual beings participating in one another's lives, or perhaps the prior witnessing of learners who did grow and change and fulfill the expectation of a nobler assumption of man. But whatever the reason, learning center personnel have continually rerouted, overcome and, when necessary, struck down the barriers that prevented access to learning.

Making learning accessible

In keeping with the philosophy that information about and strategies for learning must be provided in places convenient for consumers (20), outreach programs (24) have extended learning center services throughout the campus (3:5) as well as to off-campus centers. Mobile units and campus extensions have further reduced geographical barriers by delivering learning assistance to remote mountain areas and desert outposts; urban store front centers have become commonplace.

Financial barriers have been lowered by a variety of state and federal grant and loan programs, but the learning center has stepped in to fill the voids with book loans and emergency funds loans that can be tapped by instructors as the need arises. (8:112)

Learning center personnel have dealt with psychological barriers that students face. Strang (49:831) urged reading specialists and consultants to become competent in personnel work and Enright (18:83) reported interview techniques and weekly conferences were incorporated into remedial reading courses in the 1940's. The importance of attending to students' psychological needs has been reaffirmed by Capuzzi (9), Klausner and Osen (29). The counseling approach has enabled the learning facilitator to employ a philosophy of continuous diagnosis (13) in contrast to the clinical approach of a complete battery of tests followed by an extensive period of remediation. While diagnostic teaching (48) of reading and study skills has been an efficacious approach for students with learning difficulties, it is needed even more with the non-traditional students that frequent our centers today. The

importance of self-concept and its relationship to academic success has been demonstrated in the literature.

Kerstiens' (28) description of the ombudsman function affirmed the posture of the learning center as the voice for the concerns of the psychological needs of the non-traditional student as well as the agent for campus change.

And, of course, academic access has been and still is the core of learning assistance — its reason for being. From Enright's (18) recount of the development of the learning center concept we can conclude that helping students learn how to learn or how to study appears to be the evolutionary impetus behind the development of learning centers. Yet, when we address ourselves to the question, "How well have we done in achieving the objective of causing students to learn?" we find contradictions among those who have reviewed the literature.

Program evaluations

Roueche (40) concluded that little effort had been made to evaluate the effectiveness of our programs. Furthermore, evidence revealed problems in the uses of standardized tests, the placement of students, the abilities of instructors in handling underachievers and goal clarification of programs. And Emond (17), in reviewing the status of remediation in American junior colleges, also noted that reading research traffics in status surveys and program descriptions with few examples of program evaluation. Furthermore, he found that the majority of colleges which had evaluated their programs reported negative results.

There appears to be no disagreement regarding the absence of program evaluations. Losak (30) noted that of the 822 dissertation topics dealing with research relating to junior colleges between 1918 and 1966, only eight evaluated programs for underprepared students.

Of the 18 program evaluations reviewed by Emond, 11 had negative results and 7 revealed positive findings. The differences between these studies show that those reporting positive results reflect considerations for the unique population in community college learning centers. In lamenting the dearth of evaluations, Emond criticized learning facilitators for conceiving programs without evaluation procedures in the design. He concluded his analysis by urging learning facilitators to develop adequate and appropriate criterion measures of success, to improve measurment tools, to use appropriate statistical designs in program evaluation studies, to give greater attention to affective variables as predictors of success, and to weight-list effective programs and methods.

Other investigators have reported more positive findings. Bushnell (8) observed successes as the rule, not the exception. Kerstiens pointed out in his 1975 keynote address that "studies consistently confirm our conviction that we can successfully treat the non-traditional student." (27:4)

Although the quantity of remediation research has increased, evaluation reporting is still a neglected area.

A March 1977 ERIC search yielded 95 citations on college/adult developmental-remedial programs in the previous year; only nine of these represented program evaluations. Barbara and Michael Tomlinson (51) reported significant achievements of biology students in a reading and study skills adjunct course. Their report contained a list of references, skills, methods and materials that provided the basis for a program founded on research and successful practices. Birmingham (3), Reese (37) and Rodwick (38) all reported positive results in their evaluation of remedial and compensatory programs.

Ross (39) examined a basic studies program for college freshmen and found that all students involved made gains in reading as well as self-concept. Her investigation of the effects of peer tutoring revealed that students made greater gains in the role of teacher than in the role of student. Recommendations at the end of this report stressed the need for adequate instruments for evaluating the progress of low achieving community college students. Experience as a tutee was suggested as better preparation for becoming a tutor than in-service training. In addition, Ross conjectured that self-concept might more easily and efficaciously be measured by one question at the end of a program: Do you feel better about yourself now than when the class started? One other recommendation was the suggestion that community college low-achievers might benefit from more thorough teaching of skills with difficult material than with practice on larger quantities of easier material. She emphasized the need for more individual attention, not more individual assignments.

The ERIC search also yielded reports with negative results. An assessment by Floria (22) of the effectiveness of remedial reading courses at San Antonio College revealed no significant difference in grade point average between students who needed and completed reading and those who needed but did not take reading. Losak (30) evaluated the remedial program at Miami-Dade Junior College in 1968 and found that the program made no difference in student withdrawal rates nor did it produce a better overall score on a standardized test. In 1971 Losak (31) once again examined selected aspects of the reading-writing program of Miami-Dade Junior College. The results indicated that the program did not produce any meaningful difference in student withdrawal, in raising grade point average or in making significantly higher scores on a reading or writing test.

Using research for change

Bushnell reported in 1973 that Miami-Dade was engaged in an experimental program replacing the traditional instructional patterns of the past with more flexible learning opportunities designed to accommodate individual students' learning styles. (8:112)

There is as much to be learned from reliable studies with negative findings as from those with positive results if investigators analyze the reasons for failure and present recommendations that point up methods and materials that are to be avoided.

While more institutional research and objective self-study is needed in the field of learning assistance (41), investigations should do more than report findings. If the results are to assist educators in developing, implementing, modifying and evaluating programs, much more information must be given. The goals of the institution, the goals of the program, the objectives of the course, the course content, the strategies employed, the materials used and the evaluation design should be detailed.

With this information available, educators will be able to analyze research reports and adapt ideas, methods and materials appropriate to their situations. As Heard pointed out, "There can never be only one exact model for learning centers; institutions have personalities as complex as people do." (24:7) But it seems reasonable to emulate successful practices that are consistent with one's program goals and resources and to maintain a climate of change free from the tangle of constrictive assumptions.

We should applaud the efforts of those among us who investigate new methods and theories such as suggestopedia (26), memory storage (43), and brain hemispheric relationships (21). We should encourage much more scientific investigation into learning by becoming more involved in physiological research. We have the same need in reading/study skills that the field of psychology had when physiological psychology became a branch of the field.

We should try out our existing models, modify them and, when the need arises, construct new ones; but let us happily discard them when we find they do not fit all the facts (7:209) remembering that learning centers are not places where things are completed or finished, but rather environments for growth and change that adapt and accommodate to the populations they serve.

Organizing for change

When an evaluation reveals a need for change, how does one go about it? Bushnell (8) has listed six steps through which a problem solver should proceed in attempting to implement change. First, the problem must be diagnosed. This requires the involvement of the entire staff and should lead to a statement which sorts out the many variables operating in the situation and clearly defines the central issues and needs involved. Second, one must decide on the improvements to be achieved, the criteria to be met, the goals, and the specific objectives. The goals should be consistent with the philosophy of the learning center and the goals of the institution. Third, constraints and needed resources must be identified before selecting potential solutions and strategies. Constraints and resources can usually be classified under the categories of finance, laws and regulations, human considerations, timing,

facilities and demographic considerations. Fourth, potential solutions must be selected. All published data on the proposed change should be fully examined (42:53) to generate the most promising alternatives. Visits to centers utilizing the alternatives being considered can be helpful because the natural context is required for the full understanding of a problem. The fifth step is the selection of alternatives based on the criteria established in step two. Feasibility, workability and effectiveness are common criteria. A final decision should be based on weight-list ranking of the alternatives. Finally, the implementation of the selected alternative should involve procedures for initiation, evaluation and revision as needed.

The ultimate goal of change in our programs should be the nurturing of the potential of each individual to live a fulfilled and constructive life. (11:34) Cross (12), Roueche (42), Duncan-Hall (16), Strang (48) and others have indicated that we need not lower standards to nurture each individual's full potential; instead we must find ways to make learners successful and measure our success by our ability to bring and to keep educational opportunities within reach.

Making learners successful

But just how do we go about this business of making learners successful? If we are to commit ourselves fully to the responsibility implied in the title "learning facilitator," we must do more than just provide a climate conducive to learning that changes as needs indicate. We must couple our knowledge of learning theory with our expertise in the field of reading and study skills to cause learning to happen.

Strang (48:3) described seven principles underlying instruction:

1) Instruction should begin at or slightly below the point where the student is functioning. Diagnosis should not be thought of as something to be completed before instruction begins. Since learning in its natural state proceeds from a response (42:41), diagnosis should be an on-going, continuous process where subsequent steps are guided by feedback from each previous step. Perhaps this should more appropriately be called feedforward. Emerging hypotheses should be revised and tested while in the process of working with the individual. While observing and giving instruction, the learning facilitator is able to determine the student's approach to the learning task, the skills mastered, and the areas of deficiency, thus reinforcing the reciprocal relationship between diagnosis and instruction and insuring that no gap exists between obtaining information and using it.

Another advantage of a diagnostic approach is the opportunity to meet the expectation of the learner to receive help with his learning problem — not promises that help will be forthcoming, but immediate assistance. The student has the satisfaction of accomplishing something each time he comes to the learning center or class, which leads to the second underlying principle.

2) Success has a tonic effect; nothing succeeds like observed success. By

starting instruction at a point where success is assured, the learning facilitator capitalizes on the opportunity to improve self-concept. As stated earlier, the relationship of self-concept to learning has been verified in the literature. If we accept the broad view of learning and responsibility to maximize human potential, then we have set ourselves a truly difficult task. The difficulty of measuring personal development can be supported by examining the limitations of studies enumerated by investigators who have chosen to assess this elusive concept. Most complain of the types of measurement devices available and the difficulty in evaluating changes. Informal methods such as observation, interviews, rating scales and introspective reports are available.

3) Respect for the learner increases his self-esteem and self-confidence. Frequent conferences provide for an interchange and enable the teacher and learner to share I-thou moments. In addition, the student becomes involved in his academic destiny by helping to assess his performance, plan his program and evaluate his progress.

4) Learning takes place in a relationship. In conveying a warm positive friendly feeling, the instructor is able to demonstrate that he cares whether that student succeeds.

5) There is no substitute for skillful instruction based upon an analysis of the learning process. An instructor must know the content he hopes the student will learn, but equally important is a thorough understanding of learning theory.

6) The dynamics of the situation influence learning success. Nontraditional students need an environment that is conducive to learning, one that acknowledges that all students can learn when given appropriate help and adequate time.(4) The accepting climate, caring staff, flexible and adaptable methods and materials, adjustable time limits and interaction between student and teacher or tutor create a situation designed to result in successful learning.

7) Successful learning depends upon the utilization of all clues concerning the learner's strengths and weaknesses. Standardized tests give information only on the symptom-surface level. An approximation of the total picture requires firsthand information and self analysis by the student. This can best be done by the communication of empathetic beings participating in one another's lives — *koinonia*.

Challenges we face

Therein lies the challenge: How do we service the increasing number of students with all their diversities and yet maintain the ecologies and strategies we know to be essential in bringing successful learning within reach?

Whatever pedagogical or methodological approach, our challenge is to find the organizational structure that suits our philosophy and goals cogni-

zant of the fact that we won't ever be finished with the model. I am reminded of Thoreau's exchange with one of his student's sisters. She had been invited by him and his brother, John, to join the class at Haywood's meadow. Henry asked her what previous educational experience she had had. When she answered: "Finishing school," he said: "I warn you . . . that John and I are not finishers. Nobody leaves us with a smooth surface. We rough up the consciousness, scrape the moss off young minds." (34:3) Not every teacher can teach like that, but how grateful we are for those of you who do.

And if you think I'm leaving you with challenges, you are so right. Continue to rough up the consciousness of your students. Continue to cast conformity behind you and test out new theories and strategies. Continue to share your successes and failures. Continue to detail your investigations to enable us to benefit from your efforts. Continue to practice diagnostic-teaching in a warm and loving environment. Continue to enter into the lives of your students. Continue to have positive expectations from them. Continue to search for pieces of the truth. And continue to bring learning assistance within reach of all students. *Koinonia*.

REFERENCES

1. Aarons, H., Haig, J., and Zeitlin, P.H. Foundations for success: I feel a lot smarter now, *Community and Junior College Journal*, December/January 1976-77, 22-24.
2. A fresh new look at scheduling, teaching learning, an article reprinted from the May 1977 issue of *School Management*. In Neville P. Pearson and Lucius A. Butler (Eds.), *Learning resource centers*, Minneapolis: Burgess Publishing Company, 1973.
3. Birmingham, J.R. Developmental studies reading program. An unpublished paper presented at the Annual Meeting of the Virginia State Reading Association, Richmond, March 6-8, 1975, 9 P., *Resources in Education*, November, 1976. (ED 124899).
4. Bloom, B. S. Learning for mastery, *Instruction and curriculum*, Topical Papers and Reprints. Durham, North Carolina: National Laboratory for Higher Education, No. 1, 1-2.
5. Brossman, S. and Roberts, M. *The California community colleges*. Palo Alto: Field Educational Publications, Inc., 1973.
6. Brown, J. and Thorton, J.W. *New media in higher education*. San Jose: Association for Higher Education and the Division of Audiovisual Instructional Service of the National Education Association, 1963.
7. Bruner, J. The conditions of creativity, In Howard E. Gruber, Glenn Terrell and Michael Wertheimer (Eds.), *Contemporary approaches to creative thinking*, New York: Atherton Press, 1962.
8. Bushnell, D.S. *Organizing for change: new priorities for community colleges*. New York: McGraw-Hill Book Company, 1973.

9. Capuzzi, D. The microcounseling training model: interviewing skills for the reading instructor, In Gene Kerstiens (Ed.), *Proceedings of the seventh annual Western College Reading Association Conference*, Albuquerque, 1973, 29-34.
10. Cross, K.P. *Beyond education for all – toward education for each*. An unpublished paper delivered at the Annual Conference of the California Community and Junior College Association, San Diego,California, November 3, 1975.
11. Cross, K.P. The new learners, *Change*, February, 1973, 31-34.
12. Cross, K.P., Valley, J.R., and Associates. *Planning non-traditional programs*. San Francisco: Jossey-Bass Publishers, 1975.
13. Dempsey, J. Improving community college reading instruction through counseling and content. An unpublished address delivered at California Reading Association Conference, Fresno, California, November, 1973. *Resources in Education*, September 19, 1976. (ED 122232)
14. Dempsey, J. The new learners and their educational needs: implications for publishers. An unpublished address delivered to the Association of American Publishers, Inc., San Francisco, California, February 7, 1977.
15. Devirian, M.C., Enright, G., and Smith, G.D. A survey of learning program centers in U.S. Institutions of Higher Education, In Roy Sugimoto (Ed.), *Proceedings of the eighth annual Western College Reading Association Conference*, Anaheim, 1975, 69-76.
16. Duncan-Hall, T. The community colleges' responsibility for essential skills programs, *College Community*, January, 1977, 2-5 and 16.
17. Emond, L. *The status of remediations in American junior colleges*. A study prepared at Dean Junior College. *Resources in Education*, September, 1976, (ED 122264)
18. Enright, G. College learning skills: frontierland origins of the learning assistance center, In Roy Sugimoto (Ed.), *Proceedings of the eighth annual Western College Reading Association Conference*, Anaheim, 1975, 81-92.
19. Fairbanks, M.M. Vocabulary instruction at college/adult levels: a research review, In Gwyn Enright (Ed.), *Proceedings of the tenth annual Western College Reading Association Conference*, Denver, 1977, 19-29.
20. Faulkner, A. Developing an outreach model: from practice to theory, In Gene Kerstiens (Ed.), *Proceedings of the seventh annual Western College Reading Association Conference*, Oakland, 1974, 75-78.
21. Fenton, J.D. Cognitive learning style and the brain: some implications for education, In Gwyn Enright (Ed.), *Proceedings of the tenth annual Western College Reading Association Conference*, Denver, 1977, 179-183.
22. Florio, C.B. An assessment of the effectiveness of remedial reading courses at San Antonio College. (Doctoral dissertation, The University of Texas at Austin, 1975.) Resources Ann Arbor, Michigan: University Microfilms Order No. 75-24-864.
23. Grube, B. The Contradictions of personalizing systems, In Gwyn Enright (Ed.), *Proceedings of the tenth annual Western College Reading Association Conference*, Denver, 1977, 184-190.

24. Heard, P. Take it to 'em-or-outreach programming for college reading study centers, In Gene Kerstiens (Ed.), *Proceedings of the sixth annual Western College Reading Association Conference*, Albuquerque, 1973, 67-72.
25. Huhn, R.H., Jr. Learning skills for students in vocational education, Paper presented at the Annual Meeting of the International Reading Association Plains Regional Conference, Wichita, Kansas, March 4-6, 1976, *Resources in Education*, March, 1976, (ED 131425)
26. James, B. Suggestopedia: a teaching strategy for the severely disabled reader. In Roy Sugimoto (Ed.), *Proceedings of the ninth annual Western College Reading Association Conference*, Tucson, 1976, 107-113.
27. Kerstiens, G. The new learners: focus for the future, In Roy Sugimoto (Ed.), *Proceedings of the eighth annual Western College Reading Association Conference*, Anaheim, 1975, 1-8.
28. Kerstiens, G. The ombudsmen function of the college learning center, In Frank Greene (Ed.), *College Reading: Problems and Programs of Junior and Senior Colleges*. 21st NRC Yearbook, National Reading Conference, Milwaukee, 1972, 221-227.
29. Klausner, D. and Osen, D. The interview as a tool in the college reading center, In Gene Kerstiens (Ed.), *Proceedings of the seventh annual Western College Reading Association Conference*, Albuquerque, 1973, 97-104.
30. Losak, J.G. *An evaluation of selected aspects of a junior college remedial reading-writing program, final report*. Washington, D.C.: Office of Education, November, 1968, *Resources in Education*, November, 1968, (ED 027021)
31. Losak, J.G. Do remedial programs really work? A paper presented at the Annual Meeting of the American Educational Research Association, New York, 1971, *Resources in Education*, February, 1971, (ED 046975)
32. Medsker, L.L. The crucial role of student personnel services in the junior college, In Terry O'Banion and Alice Thurston (Eds.), *Student development programs in the community junior college*, New Jersey: Prentice-Hall, Inc., 1972.
33. *Missions of the college curriculum*, Report of the Carnegie Foundation of the Advancement of Teaching. San Francisco: Jossey-Bass, Inc., 1978.
34. Moon, R.W. Cast conformity behind you. An unpublished paper delivered in Stockton, California, March 5, 1978.
35. Moon, R.W. The razor edge of danger. An unpublished paper delivered in Stockton, California, February 19, 1978.
36. Parnell, D. The uniquely American college, *College Community*, May, 1977, 8-9.
37. Reese, T. *Effectiveness of a college reading program*. (Doctoral Dissertation, Temple University, 1976) Ann Arbor, Michigan: University. Microfilms Order No. 76-15, 860.
38. Rodwick, J. and Grady, M.J. *The second change:* a summary report. Resources in Education, July, 1976, (ED 081415)

39. Ross, S.F. *A study to determine the effect of peer tutoring on the reading efficiency and self-concept of disadvantaged community college freshmen: final report. Resources in Education*, January, 1974, (ED 081415)
40. Roueche, J.E. *Salvage, redirection or custody? remedial education in the community college*. Washington, D.C.: American Association of Junior Colleges, ERIC Monograph Series, Monograph 1, 1968.
41. Roueche, J.E. and Boggs, J.R. *Junior college institutional research: the state of the art*. Washington, D.C.: American Association of Junior Colleges, ERIC Monograph Series, Monograph 2, 1968.
42. Roueche, J.E. in collaboration with Pitman, J.C. *A modest proposal: students can learn*. San Francisco: Jossey-Bass Inc., Publishers, 1972.
43. Sagan, C. *The dragons of eden: speculations on the evolution of human intelligence*. New York: Random House, 1977.
44. Slater, P. *The pursuit of loneliness*. Boston: Beacon Press, 1972.
45. Smith, F. *Psycholinguistics and reading*. New York: Holt, Rinehart and Winston, Inc., 1973.
46. Smith, F. *Understanding reading*. New York: Holt, Rinehart and Winston, Inc., 1971.
47. Smith, G.D. Freshmen orientation: a study skills approach, In Gene Kerstiens (Ed.), *Proceedings of the seventh annual Western College Reading Association Conference*, Oakland, 1974, 171-174.
48. Strang, R. *Diagnostic teaching of reading*. New York: McGraw-Hill Book Company, 1969.
49. Strang, R. The relation of guidance to the teaching of reading, *Personnel and Guidance Journal*, April, 1966, 831-835.
50. Tomlinson, B. and Green, T. Integrating adjunct reading and study classes with the content areas, In Roy Sugimoto (Ed.), *Proceedings of the ninth annual Western College Reading Association Conference*, Tucson, 1976, 199-203.
51. Tomlinson, B. and Tomlinson, M. Integrating reading and study skills into college biology. A paper presented at the 1975 National Reading Conference. *Resources in Education*, November, 1976, (ED 124903)

MODERN MEASUREMENT TECHNOLOGY: MIRACLE OR MIRAGE?

W. James Popham
University of California, Los Angeles and
Instructional Objectives Exchange

Educational measurement is attracting a ton of attention these days. Chiefly as a consequence of state and federal evaluation requirements, educators are being barraged with more information regarding measurement than they may want to possess. Traditional testing practices are being assailed, while more recent measurement strategies are being lauded. Indeed, to hear some zealots extoll the virtues of modern measurement techniques, it would seem that we're in the midst of an unparalleled assessment miracle. But before we get caught up with visions of Lourdes or Fatima, perhaps we should ponder the validity of these claims for modern measurement breakthroughs.

Basic distinctions

Prior to examining the claims of modern measurement proponents, let's consider briefly why traditional testing practices are currently being criticized. First off, it is important to distinguish between two general assessment strategies, namely, norm-referenced measurement and criterion-referenced measurement. Norm-referenced measurement, the traditional testing approach that most of us have experienced, ascertains an examinee's status with respect to that of other individuals (a norm group). Criterion-referenced measurement ascertains an examinee's status with respect to a well-described domain of behaviors. Thus, a norm-referenced test yields a relative depiction of the examinee's performance, while a criterion-referenced test provides an absolute depiction of an examinee's performance. It should be noted, incidentally, that the remainder of this brief analysis refers exclusively to achievement, not aptitude tests.

Shortcomings of norm-referenced tests

The initial weakness of norm-referenced achievement tests is that what they actually measure is so loosely described that unrecognized mismatches often occur between what is tested and what is being taught. This problem arises because commercial test publishers, in recognition of widespread curricular diversity throughout the U.S., describe their tests in very general terms so as to make them more appealing to would-be purchasers. Unfortunately, the resulting vague descriptive information often leads educators to unwittingly select achievement tests which fail to coincide with local curricular emphases.

A second, related problem with norm-referenced achievement tests is that their diffuse descriptions fail to provide sufficiently precise targets for instructional designers. In order to create an effective instructional sequence, teachers need to provide relevant practice opportunities for learners. But the vagueness with which norm-referenced achievement tests are described precludes the design of on-target instructional programs.

Finally, the psychometric procedures which are employed to improve norm-referenced tests tend to exclude test items covering important skills and knowledge. In brief, here's how this comes about. Norm-referenced test constructors must strive to produce considerable response variance in examinees' scores. Only with a substantial amount of response variance is it possible to make the fine-grained comparisons among examinees that are at the heart of the norm-referenced measurement model. But test items which are answered correctly by a large proportion of students, say 80-90 per cent, do not contribute greatly to producing response variance, hence are eliminated when the test is revised. However, those items often cover the very topics that teachers thought important enough to stress. The more attention the teacher gives a concept, the better that students perform on items related to that concept, hence the more likely that those items will be excised when the test is revised. This tendency leads to the creation of instructionally insensitive achievement tests.

Criterion-referenced antidotes

Because the essence of a well-constructed criterion-referenced test is its heightened descriptiveness, the problem of unrecognized mismatches between instruction and measurement is readily eliminated. In the same vein, the more lucid descriptive quality of criterion-referenced tests provides excellent targets for instructional designers. Finally, since there is no necessity with criterion-referenced tests to produce great response variance among examinees, valid test items which well-instructed students answer correctly need not be eliminated. On all counts, then, criterion-referenced tests can alleviate the deficiencies of norm-referenced tests for purposes of instruction and evaluation.

Miracle or mirage?

But, distressingly, it must be reported that currently there are not all that many really high quality criterion-referenced tests that can be wheeled out. Too many so-called criterion-referenced tests are nothing more than norm-referenced measures masquerading in criterion-referenced costumes. Not only is the technology of criterion-referenced measurement yet embryonic, but the potential consumers of criterion-referenced tests are unaware of what a decent criterion-referenced test truly is.*

Thus, when we try to decide whether the current drum-pounding about modern measurement breakthroughs represents a miracle or a mirage, we'll have to concede that it's only 20 percent miracle and 80 percent mirage. But those proportions must always be contrasted with traditional norm-referenced achievement tests which, for purposes of instruction or evaluation, are a 100 per cent mess.

*For a more complete description of the attributes of such measures, see Popham, W. James, *Criterion-Referenced Measurement*, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1978.

PSYCHOLINGUISTICS IN RAPID READING

Lorraine M. Boothe and Ann E. McIver
California State University, Northridge

Cognitive psychology is the exploration of learning and thought processes through perception. Linguistics is the study of the structure of a language. The field which combines these two disciplines is psycholinguistics. Psycholinguistics, when applied to reading, is not a method of teaching reading, but rather a foundation for understanding reading and thinking processes.

Cooper and Petrovsky (2) have outlined several strategies used by fluent readers based on a psycholinguistic model. At California State University, Northridge, we have taken these reading strategies and designed a comprehensive six-week, 18-hour, rapid reading program for able readers. Several techniques used in class combine two or more of these reading strategies.

Applications of reading strategies

I. The reader discovers distinctive features in letters, words, and meaning.

In other words, the reader makes use of a continuum of information value. For example, in an article about helicopters, the use of the word "helicopter" will diminish in information value on its third or fourth repetition. As the article as a whole continues, the reader makes use of the new information gleaned from the early part of the article to help him understand the latter part. There is also a diminishing of information value as the whole article continues.

In addition, the syntax used in the structure of the article is familiar to the reader and a good reader will make use of this tactic to help him speed up his reading rate.

II. The reader takes chances — risks errors — in order to learn about the printed text.

The reader relies on his previous knowledge of a given topic to make predictions about what the writer is going to say. For example, from the title "Tagging Polar Bears for Research," the reader could predict the following: (a) it is probable the action takes place in a cold, wild region, in difficult terrain; (b) the kinds of people participating in this research are zoologists, fish and game personnel, and territorial guides; (c) the polar bears would be tracked and immobilized long enough to tag; (d) the article will justify the value of polar bear research.

The reader then reads to confirm his predictions taking the chance that his previous knowledge may be erroneous or incomplete, but in the process gaining new insights.

III. The reader reads to identify meaning rather than letters or words.

Again the use of familiar syntax comes into play here. Smith (6) and Rystrom (7) have stated that the fluent reader actually samples the text to identify meaning. Seeing paragraphs as individual words, or even seeing paragraphs as individual sentences, will only slow the process of extracting meaning. A technique which we call paced reading is designed to meet this as well as other reading strategies. When the reader is allowed only a very limited time span (i.e., eight seconds a page in an average paperback novel), the reader must read for meaning if he is to understand anything at all.

IV. The reader guesses from context at unfamiliar words — or just skips them.

The good reader's context is not just the sentence in which the unfamiliar word is used, but also the whole paragraph — sometimes even the entire article. The reader makes use of taking chances, risking errors, (II) when he guesses at the meaning of a word, or, more precisely when he skips it altogether. A technique detecting unessential words and the use of paced reading enhances the use of this strategy.

V. The reader takes an active role in bringing to bear his knowledge of the world and of the particular topic in the text.

This is tied to taking chances (II), by relying on what you already know. Here we use a predictive process to engage the reader in active reading. Our technique is *SKIP3R*: *S*kimming for *K*ey *I*deas, *P*redict, *R*ead, *R*eflect, *R*eview. The prediction process can follow one of two methods: the general (what do I already know about this?) or the specific (turning what is gleaned from the skimming process into questions and from there predicting how the article will continue).

VI. The reader expects the text to make sense.

This seems basic and obvious, but there are readers who truly do not expect what they read to make any sense. In the process described in SK1P3R (V), the able reader begins with this inherent characteristic — that the text will make sense. The less able reader, however, is exposed to this concept for the first time.

VII. The reader makes use of redundancies — orthographic, semantic, syntactic — to reduce uncertainty about meaning.

Again, as discussed in discovering distinctive features and meaning (I), the reader makes use of new and old information on a diminishing continuum.

Let us use this example to discuss the use of orthographic, semantic and syntactic redundancy:

> He did not want her to say any more. He did not want to hear it. "No!" he cried out. "No!" (1:73)

Orthographically, the fluent reader makes use of the quotation marks, exclamation points, and capital letters. The quotation marks indicate someone is speaking so he does not need the redundant "he cried out" and therefore skips it. The exclamation points and capital letters used within the quotation marks indicate strong feeling and shouting. Again, "he cried out" is redundant.

Semantic redundancy is shown by repeating "he did not want . . ." for emphasis in the second sentence. Further redundancy is the fact that he shouts "no!" twice.

The use of syntactic redundancy can be demonstrated by the deletion from the text of certain words unessential to meaning. This example, then, would read as follows: . . . not want her . . . say . . . more . . . not . . . hear . . . "No!".

To encourage the use of redundancies we use unessential words exercises in which the reader learns to recognize information bearing words.

VIII. The reader corrects disconfirmations by regressions or circling back when tentative interpretations are not successful.

Using the above example, suppose the text read as follows:

> He did not want her to say any more. He did not want to hear it. "Go on!" he cried out. "Finish what you're saying . . ."

The reader, having just read two negative sentences, would predict that, if the character would say anything at all, he would tell her to stop. By reading "Go on!" the able reader would immediately pause, either consciously or

unconsciously think he missed something, and would circle back several lines to locate his error before continuing forward.

IX. The reader maintains speed in order to overcome the limitations of the visual processing and memory system.

If a reader reads too slowly he overloads his short term memory (6) and therefore cannot remember the beginning of the paragraph by the time he gets to the end. As in identifying meaning (III), the reader reads to identify meaning and must, therefore, maintain a reasonable speed to do so. Our techniques of paced reading help the reader maintain sufficient speed while extracting meaning from the text.

Rapid reading techniques for the classroom

Steps in the "Detecting Unessential Words" exercise:

1. The class reads a newspaper article under timed conditions.
2. The class answers comprehension questions based on the article.
3. The instructor demonstrates how to determine the informational value of the words in the first few sentences. Articles, prepositions, auxiliary verbs, some adjectives, and at times, whole phrases and clauses can be deleted.
4. The class pencils out the non-information bearing words in the remainder of the article.
5. The class re-reads what has not been deleted, again, under timed conditions, and compares the two reading rates.

Steps in the "Paced Reading" exercise:

1. The student reads an assigned paperback novel for three minutes, calculates his reading rate, and marks the last page read as his starting point for each of the paced readings to follow.
2. The instructor elicits predictions of possible outcomes of the novel from the class.
3. Under strictly timed conditions, the student is paced through a selected number of pages at a highly accelerated rate, cued by the instructor's directive.
4. The student reflects, i.e., writes down words and phrases that he recalls from his reading.
5. Using the original starting point, the student repeats Steps 3 and 4 twice. In each case, the time allowed per page is increased. In the reflection Step 4 after the third paced reading, the student notes down the names of the characters and a brief plot summary.
6. The student reads for three minutes using new material at the point in the novel where he stopped the paced reading practice. The student re-calculates his rate and compares it with the rate of the first three minute reading.

After the class becomes familiar with the paced reading technique, several variations are possible.

a. The pacing time per page may be varied.
b. The third pacing may cover new material. In this case the instructor should repeat the prediction process of Step 2 before the third pacing.
c. For subsequent pacing practices, Steps 1 and 6 may be eliminated. Step 6 may be replaced by a ten minute non-cued reading in which the student attempts to maintain the timing of the third paced reading.

Steps in the SKIP3R exercise:

1. The class *S*kims an article for its *K*ey *I*deas and for points of probable difficulty.
2. The instructor calls on the class for two kinds of information:
   a. Their prior knowledge of the article's *K*ey *I*deas.
   b. Their predictions of the article's outcome and points of probable difficulty.
3. The outcome predictions are turned into questions with the instructor's assistance.
4. The class *R*eads the article, pausing at appropriate points to *R*eflect, i.e., write recollections without the aid of the text and the answers to the prediction questions.
5. The class rates the questions on their usefulness as predictors
6. At a subsequent session, the class *R*eviews its reflection notes and takes a mock test based on the useful prediction questions.

This technique is a variation of the SQ3R method (4), and is a technique for promoting reading efficiency rather than "rapid reading."

Results

An analysis of the pretest and posttest scores of 101 students on Part I, Reading Rate and Comprehension, of the *McGraw-Hill Basic Skills Reading Test*, Forms A and B, indicate a mean increase of 154 words per minute with maintained comprehension in easy material. In hard material, the mean increase was 99 words per minute with slightly increased comprehension. The absence of a control group limits these findings, but they suggest a positive trend. Follow-up studies should make use of a control group-experimental group research design.

REFERENCES

1. Brackett, L. *Sword of rhiannon*, New York: Ace Books, 1953.
2. Cooper, C.R., and Petrovsky, A.R. A psycholinguistic view of the fluent reading process, *Journal of Reading*, December 1976, 19, 184-207.

3. Raygor, A.L. *Reading test*, Monterey: McGraw-Hill, 1970.
4. Robinson, F.P. *Effective study*, New York: Harper & Row, 1961.
5. Rystrom, R. Reflections of meaning, *Journal of Reading Behavior*, Summer 1977, 9, 193-200.
6. Smith, F. *Understanding reading: a psycholinguistic analysis of reading and learning to read*, New York: Holt Rinehart & Winston, 1971.

A NATIONAL SURVEY OF LEARNING ASSISTANCE EVALUATION: RATIONALE, TECHNIQUES, PROBLEMS

Carol Clymer
New Mexico State University

Most practitioners in the area of college level reading and study skills would agree emphatically that the learning assistance movement has gained great momentum in recent years. Universities which once offered a course in reading and/or study skills improvement have expanded and supplemented this service. What has emerged is the learning assistance concept. Frank Christ (5) states that the learning assistance concept encompasses more than the reading and study skills course, "It includes the world of the learner, the environment in which and with which he must cope to remain in college and to graduate from college." (5:33) Devirian, Enright, & Smith (9), in 1974, attempt to give definition to this field evolving throughout the nation. They report that at least 759 institutions in the U.S. have learning study skills programs and 115 institutions indicate plans to develop a learning center (9). The authors use the term learning program generically to describe centers or programs "which provide instruction in reading, study skills, or general academic assistance to enable students to learn more in less time with greater ease." (9:67) In this paper, the term learning assistance program will be used in this sense.

With the increased demand for educational accountability, evaluation of learning assistance programs has gained emphasis (7, 10, 11, 17, 21, 27). College level reading instruction has been evaluated as early as 1929 (24). However, since that time many studies have been reported in the professional literature which attempt to determine the effectiveness of reading and study skills programs, but not the learning assistance concept *per se* (2, 12, 14, 15, 19, 24, 26, 27). Mostly these studies have been concerned with the evaluation of instruction, not the total program. Furthermore, they have been widely criticized for lack of adequate experimental design and control (3, 15, 20, 23, 24, 25, 27), inadequate and inappropriate criteria as measures of success (2, 19, 25, 27), ineffective measurement tools (2, 19, 25, 27), misuse of statistics in analyzing data (20, 23, 24, 25), unwarranted generalizations in

reporting results (3, 20, 23, 25), lack of attention to affective variables as predictors of success (2, 19, 20, 24, 25), and failure to determine long-term effects of instruction (13). Typically, these researchers have used GPA, pre-post test scores, credit hour production, and attrition rate to evaluate the effectiveness of the program. Of late, criticism of the studies has generated from the belief that evaluation of reading and study skills programs, especially those which have integrated the learning assistance concept, must be ongoing, formative, and cybernetic. Hence, the purpose of reading and study skills program evaluation is not to conduct empirical research, but rather to determine the extent to which a program achieves its objectives, meets the needs of the students which it serves, effectively trains its instructors, and appropriately revises ineffective and inefficient components of the total program (19, 22).

Devirian (7) addresses this issue in a paper presented at the seventh annual conference of the Western College Reading Association where she describes the systems approach to accountability in the Learning Assistance Center at California State University – Long Beach. She explains:

> In terms of accountability being concerned with effectiveness and efficiency, a Learning Assistance Center is held accountable through this cybernetics approach to systems. This allows the LAC to be accountable not only to itself as a system and a program, but also to be accountable to its learners and learning facilitators, the campus it serves, its sponsoring agency, and to other Learning Assistance Centers.
>
> Improved data collection, analysis, and subsequent changes are required for improved accountability. (7:52)

A number of accounts appear in the literature which describe systems approaches of evaluating reading and study skills programs (1, 6, 7, 10, 16, 18, 20, 21, 28). Discussion of these evaluation methodologies, employed when a systems approach is implemented, can be found in the literature to some extent; however, descriptions of the programs occur more frequently (4).

In 1973, Devirian reveals that in the literature "little can be found that discusses data collection and analysis to derive accountabilty." (7:52) Currently, there remains a paucity of information regarding evaluation procedures and data collection and analysis. But, there is evidence that practitioners who evaluate learning assistance programs are using more informal, ongoing methods to determine the effectiveness of the total program and its components.

In order to gain a more accurate account of the status of evaluation of the learning assistance progam concept and its components, a national survey was undertaken in 1977. Although more than fifty surveys of learning skills centers at the state and national level have been reported (8) none of them deal specifically with evaluation.

Procedure

The survey instrument of this study consisted of twenty-seven questions on type of program, population served, funding sources, evaluation rationale and methodology, information gained and problems encountered in evaluation, frequency of evaluation, importance of evaluation of program components, and the extent of revision after evaluation. The questionnaire was mailed to 231 directors of learning assistance programs in the United States. The selection of program directors was not random, but an attempt was made to obtain a representative sample within four regions of the U.S., as defined by the National Assessment of Educational Progress. Since the exact number of learning assistance programs is not available, the number of survey instruments sent to each region was based on an approximation of the numbers of programs in each region.

A total of 181 (78%) of the questionnaires were completed and returned. The results were processed on an IBM computer 360, and the Statistical Package for Social Sciences Version H was used in processing the data. Numbers and frequency of responses were determined for each survey item, and data accumulated from several pertinent questions were cross tabulated. Additionally, the data were categorized according to region, type and level of institution, and size of program. Responses from all questions were cross-tabulated within these categories.

Results

Following is a preliminary report of some of the data collected. Analysis will be made of the additional data and reported at a later time.

Table I
DEMOGRAPHIC DATA

Variables	Responses: Frequency (Percentages)	
Regional		
West: Ak., Ariz., Calif., Colo., Hi., Id., Mont., Neb., Nev., N. Mex., Okla., Oreg., Tex., Ut., Wash., Wyo.	54	(29.8)
Central: Ill., Ind., Ia., Kans., Mich., Minn., Mo., N. Dak., Oh., S. Dak., Wis.,	52	(28.7)
Northeast: Conn., Del., Me., Md., Mass., N.H., N.J., N.Y., Pa., R.I., Vt., Wash. D.C.	38	(21.0)
South: Ala., Ark., Fla., Ga., Ky., La., Miss., N.C., S.C., Tenn., Va., W. Va.	37	(20.4)
Total	181	(99.9)
Level of Institution		
4 year	106	(58.6)
2 year	75	(41.4)
Total	181	(100.0)
Type of Institution		
Public	144	(79.6)
Private	37	(20.4)
Total	181	(100.0)
Type of Client Served Most Frequently		
Incoming Freshmen	83	(45.9)
Lower Classmen	46	(25.4)
EOP/Special Admits	12	(6.6)
Upper Classmen	2	(1.1)
Other	38	(21.0)
Total	181	(100.0)
Admission Policy		
Open	108	(59.7)
Closed	68	(37.6)
Total	176	(97.3)
Credit Offered		
Yes	62	(34.3)
Sometimes	64	(35.4)
No	54	(29.8)
Total	180	(99.5)
Highest Priority Program Function		
Learning Skills*	61	(33.7)
Reading Skills	50	(27.6)
Tutorial	25	(13.8)
Writing Skills	6	(3.3)
Other	38	(21.0)
Total	180	(99.4)

* includes reading and study skills

BEST COPY

Discussion

The extremely high percentage of return (78%) of this survey is a clear indication that learning assistance program directors are concerned with evaluation. Furthermore, the results of the survey indicate that evaluation is ongoing, and is largely to facilitate the maintenance of efficient and effective programs which assist students in succeeding in college.

Overwhelmingly, the most important reason for evaluation is to improve the total program, which is followed by providing staff with performance

Table II
EVALUATION RATIONALE

Variables	Responses: Frequency (Percentages)				
	Priority Rankings				Total
	1 (High)	2	3	4 (Low)	
To Improve the Total Program	140 (85.4)	22 (13.4)	2 (1.2)	0	164 (100.0)
To Give Program Staff Performance Feedback	28 (18.3)	88 (57.5)	35 (22.9)	2 (1.5)	153 (100.0)
To Retain and/or Increase Funding	17 (12.9)	27 (20.5)	74 (56.1)	14 (10.6)	132 (100.1)
To Determine Accreditation	1 (1.0)	3 (3.1)	13 (13.3)	81 (82.7)	98 (100.1)

Table III
IMPORTANCE OF EVALUATING PROGRAM COMPONENTS

Variables	Responses: Frequency (Percentages)			
	Very Important	Somewhat Important	Not Important	Total
Total Program Effectiveness	157 (93.5)	10 (6.0)	1 (0.6)	168 (100.1)
Management of Program	110 (66.3)	50 (30.1)	3 (1.8)	163 (98.2)
Communication Among Staff	110 (66.7)	35 (21.2)	10 (6.1)	155 (94.0)
Training of Staff	102 (62.2)	40 (24.4)	8 (4.9)	150 (91.5)
Materials Used	91 (54.8)	66 (39.8)	6 (3.6)	163 (98.2)
Publicity	55 (33.5)	75 (45.7)	20 (12.2)	150 (91.4)

feedback. Evaluation for the purpose of funding or determining accreditation appears to be less important. In terms of evaluating components of the program, respondents most frequently indicated that it is very important to assess total program effectiveness, program management, materials used in the program, and communication and training of staff. Although evaluation of publicity of the program was very important for some, it is not as important as the other components or the total program.

An objective of the majority of programs surveyed is to assist students in developing skills which will enable them to succeed in college. The achievement of this objective is most often determined by follow-up studies and research conducted in other courses in which the students are enrolled. Additionally, most programs which have not yet evaluated the accomplishment of this objective intend to conduct some type of follow-up study.

While most respondents felt that they could demonstrate that students' improved learning skills are a direct result of instruction offered through the program, a substantial number (22.1%) believe that this "is never absolutely

Table IV
DETERMINATION OF STUDENT ACADEMIC SUCCESS: LONG TERM

Variables	Responses: Frequency	(Percentages)
Methods		
Follow-up Studies	94	(55.6)
Analyses of Ability to Perform in Other Courses	42	(24.9)
Not Yet Determined*	52	(30.8)
Not Objective of Program	6	(3.6)
Other	24	(14.2)
Total Number of Responses	218*	(129.0)
Total Number of Individuals Responding	169	
***Plans to Determine Academic Success**		
Yes	45	(73.8)
No	16	(26.2)
Total	61	(100.0)

*Respondents may have checked more than one variable for this item.

Table V
DETERMINATION OF IMPROVED LEARNING SKILLS:
PROGRAM TERMINATION

Variables	Responses: Frequency	(Percentages)
Students Demonstrate Improvement During Course	99	(58.9)
Student Testamonials	99	(58.9)
Never Absolutely Determined	63	(37.3)
Other	24	(14.3)
Total Number of Responses	285*	(169.6)
Total Number of Individuals Responding	168	

*Respondents may have checked more than one variable for this item.

determined." The word "absolutely" was troublesome for some respondents; in the context of statistics, findings which are absolute are non-existent.

It is also interesting to note the methods which are most often used to evaluate a total program: center usage, user questionnaires, and standardized tests, provide the most information to practitioners. It is not surprising that many programs use GPA analyses, attrition rate, and testing to evaluate, but there is considerable evidence to demonstrate that evaluation design is becoming less formal. Practitioners seem to employ methods which encourage student assessment of the value of the total program, the instruction, the materials, and the transferability to other academic situations. Most programs encourage informal feedback from students through oral or written testimonials, questionnaires, or the familiar suggestion box technique. Another valuable item for which data is collected is the number of referrals by faculty or students who have participated in the program.

Table VI
METHODS USED TO EVALUATE PROGRAM

Variables	Responses: Frequency	(Percentages)
Methods		
User Questionnaire	117	(71.3)
Center Usage	103	(62.8)
Standardized Tests	103	(62.8)
Analyses of User GPA	75	(45.7)
User Attrition	59	(36.0)
Campus Administration Evaluation	55	(33.5)
Other	41	(25.0)
Total Number of Responses	553*	(337.2)*
Total Number of Individuals Responding	164	
*Respondents may have checked more than one variable for this item.		
Methods Which Provide Most Information		
User Questionnaire	74	(44.8)
Center Usage	70	(42.4)
Standardized Tests	48	(29.1)
Analyses of User GPA	46	(27.9)
User Attrition	39	(23.6)
Campus Administration Evaluation	16	(9.7)
Other	26	(15.8)
Total Number of Responses	319*	(193.3)
Total Number of Individuals responding	165	
Informal Methods		
Student Verbal Comments	131	(79.4)
Unstructured Student Written Evaluation	95	(57.6)
Program Produced Evaluation Forms	101	(61.2)
Other	30	(18.2)
Total Number of Responses	357*	(216.4)
Total Number of Individuals Responding	165	
*Respondents may have checked more than one variable for these items.		

This survey did not ask for specific information on experimental studies which are being conducted in evaluation. Although the prominent use of follow-up studies to determine "long-term effects" of a learning assistance program is demonstrated in this survey, the nature of these studies is only partially revealed when respondents were asked to describe plans to "determine academic success." In light of the extensive criticism of the experimental studies reported in the literature, further research to define trends of experimental designs used to evaluate students' increased ability to succeed in college is highly recommended.

Responses in categories labeled "other" frequently reveal that the hiring of outside consultants is apparently becoming widely practiced in evaluation of learning assistance programs. Perhaps this trend is a reflection of criticism in the past which related to the reluctance of evaluators to be objective in the analysis of data.

In the area of evaluation of learning assistance programs, we are truly "charting our course." As we continue to assess our work as professionals, our instructional relationships with students, our supervisory roles with staff, and our communication skills with colleagues; and as we make changes in our programs that will enhance the delivery, acceptance, and integration of the learning assistance concept, then, we will be closer to accountability. Ideally, our evaluation methodology will change as learning assistance programs, objectives, and clients change. We will always need more research, more surveys, and more literature inputs to "chart our course" in evaluation, to evaluate how we evaluate.

REFERENCES

1. Anderson, C. A study of accountability in the community college reading programs. In Phil L. Nacke (Ed.) *Programs and practices for college reading*. Twenty-second Yearbook of the National Reading Conference, (Vol. II), 1973, 21, 7-11.
2. Anderson, W.W. Evaluation of college reading and study skills programs — problems and approaches, *Reading World*. March 1975, 14:3, 191-197.
3. Bleismer, E. The status of research in college reading, in Oscar S. Causey and Albert Kingston (Eds.) *Evaluating college reading programs*. Fourth Yearbook of the Southwest Reading Conference for Colleges and Universities. 1955, 4, 28-38.
4. Bleismer, E.P. 1971 Review of research on college-adult reading. In Frank P. Greene (Ed.) *Investigations relating to mature reading*. Twenty-first Yearbook of the National Reading Conference, Volume 1, 1972, 21, 298-330.
5. Christ, F. Systems for learning assistance: learners, learning facilitators, and learning centers. In Frank L. Christ (Ed.) *Interdisciplinary Aspects of Reading Instruction*. Fourth Annual Proceedings of the Western College Reading Association, Los Angeles, 1971, 4, 32-41.

6. Christ, F.L. Management of a learning assistance sector, In Gwyn Enright (Ed.) *Personalizing learning systems: ecologies and strategies*. Tenth Annual Proceedings of the Western College Reading Association. 1977, 10, 76-81.
7. Devirian, M. Data collection: a cybernetic aspect of a learning assistance center. In Gene Kerstiens (Ed.) *Technological alternatives in learning*. Sixth Annual Proceedings of the Western College Reading Association. 1973, 6, 51-58.
8. Devirian, M.C., Enright, G., and Smith, G. A survey of learning program centers in U.S. institutions of higher education. In Roy Sugimoto (Ed.) *College learning skills today and tomorrowland*. Eighth Annual Proceedings of the Western College Reading Association, 1975, 8, 69-76.
9. Devirian, M.C., Enright, G., and Smith, G. *Reading: convention and inquiry* In George H. McKinch and Wallace D. Miller (Eds.) Twenty-fourth Yearbook of the National Reading Conference. 1975, 24, 67-73.
10. Drexler, J. A. Jr., and Pepper, R.S. Methods of evaluating reading programs for marginal admission students. In Frank P. Greene (Ed.) *College reading: problems and programs of junior and senior colleges*. Twenty-first yearbook of the National Reading Conference, (Vol. II) 1972, 2, 189-197.
11. Earnheart, N.M. Evaluation: toward responsible accountability. In Gene Kerstiens (Ed.) *Reading: putting all the cards on the table*. Fifth Annual Proceedings of the Western College Reading Association, 1972, 5, 34-41.
12. Entiwisle, D.R. Evaluations of study skills courses: a review, *Journal of Educational Research*. March 1960, 53, 243-251.
13. Evans, H. and Dubois, E.E. Community college remedial programs — reflections, *Journal of Reading*. October 1972, 16:1, 38-45.
14. Fairbanks, M.M. The effect of college reading improvement programs on academic achievement. In Phil L. Nacke (Ed.) *Interaction: research and practice for college-adult reading*. Twenty-Third Yearbook of the National Reading Conference, 1974, 23, 105-114.
15. Fairbanks, M.M. Relationship between research control and reported results of college reading improvement programs. In George H. McNinch and Wallace D. Miller (Eds.) *Reading: convention and inquiry*. Twenty-Fourth Yearbook of the National Reading Conference, 1975, 24, 80-93.
16. Ferrell, G.M. and Segal, J.F. The description and evaluation of a learning skills workshop. In Roy Sugimoto (Ed.) *The Spirit of '76: revolutionizing college learning skills*. Ninth Annual Proceedings of the Western College Reading Association. 1976, 9, 66-71.
17. Hagstrom, J. Keynote address: mastery learning and politics, the honeymoon is over. In Gwyn Enright (Ed.) *Personalizing learning systems: ecologies and strategies*. Tenth Annual Proceedings of the Western College Reading Association, 1977, 10, 1-5.
18. Maxwell, M. J. and Magoon, J.M. Self-directed educational skills programs, a descriptive and comparative evaluation. *The Journal of College Student Personnel*, December 1962, 86-89.

19. Maxwell, M. Evaluating college reading and study skills programs. *Journal of Reading*. December 1971, 15, 214-221.
20. Maxwell, M.J. Evaluating an individualized college reading service: alternative criteria and statistical models to the test-retest paradigm, *Journal of Reading Behavior*, Summer 1970, 4, 1-8.
21. Osen, D.K. A systems approach to establishing accountability in the college reading program. In Gene Kerstiens (Ed.) *Reading: putting all the cards on the table*. Fifth Annual Proceedings of the Western College Reading Association, 1972, 5, 113-120.
22. Raygor, A. Keynote address: meeting the individual needs of students. In Gwyn Enright (Ed.) *Personalizing learning systems: ecologies and strategies*. Tenth Annual Proceedings of the Western College Reading Conference, 1977, 10, 6-10.
23. Reed, J.C. Some effects of short-term training in reading under conditions of controlled motivation. *Journal of Educational Psychology*, May 1956, 47, 257-264.
24. Santeusano, R.P. Do college reading programs serve their purpose? *Reading World*. May 1974, 13, 258-271.
25. Summerfield, R. Problems in evaluating college reading programs. In Oscar S. Causey and Albert Kingston (Eds.) *Evaluating college reading programs*. Fourth Yearbook of the Southwest Reading Conference for Colleges and Universities. 1955, 4, 17-27.
26. Tillman, C.E. Measuring outcomes in college reading programs. In Frank P. Greene (Ed.) *College Reading: Problems and Programs of Junior and Senior Colleges*. Twenty-first Yearbook of the National Reading Association (Vol. II) 1972, 21, 205-212.
27. Tillman, C.E. Four-year college reading improvement programs and grades: an annotated review, 1945-1971. *Journal of Reading Behavior*. Spring 1972-78, 5, 100-109.
28. Turner, C. and Willard, C. Developing program evaluation: an ongoing process. In Roy Sugimoto (Ed.) *College learning skills today and tomorrowland*. Eighth Annual Proceedings of the Western College Reading Association. 1975, 8, 203-206.
29. Wilkinson, E.G. Using program analysis to aid accountability and planning. In Gwyn Enright (Ed.) *Personalizing learning systems: ecologies and strategies*. Tenth Annual Proceedings of the Western College Reading Association. 1977, 10, 90-98.

YOUR STUDENTS' COGNITIVE FUNCTIONING: AN IMPORTANT FACTOR IN READINESS TO LEARN

Elaine Landau Cohen and David A. Smith-Gold
Metropolitan State College

This paper deals with the relationship between students' levels of cognitive functioning and their ability to perform complex academic tasks. Before discussing how students' cognitive operations affect the learning process, a definition must be provided for the two levels of cognitive development at which most college students are functioning. Our definition is based upon the research of Jean Piaget (1) depicting the cognitive developmental sequence.

The third stage of Piaget's theoretical model is the stage of "concrete operations." According to Piaget, most children develop through this stage between the ages of 7 and 11. "This stage is the one in which children develop a more coherent and integrated cognitive system with which they organize and manipulate their immediate environment." (8:17)

The fourth stage, the stage of formal operations, according to Piaget, is incorporated by most children between the ages of 11 and 15.

> This stage is characterized by the development of the capacity for formalized, precise, logical and abstract thought fully materialized . . . . A given stage response on a task does not represent a specific response determined by knowledge and familiarity with that task or tasks similar to it. Rather, it represents an underlying thought structure. (8:17)

However, recent research by McKinnon (4), Renner (7), Killian (3), Tomlinson-Keasy (10), and Smith-Gold and Cohen (9), provide substantial information that the acquisition of Piaget's developmental stages occurs at much later ages and in a large portion of the cases, the last level, formal operations, is never obtained.

Since the 1960s, American colleges and universities have experienced a large influx of non-traditional students. As this population interacted in

classrooms based upon traditional instruction, it became apparent that there was a disparity in the level of intellectual processing between the traditional and non-traditional student. As McKinnon states:

> The professor expects his students to be capable of independent thinking, to interact in situations demanding clear and rational thought and to combine that thought with expressive communicative techniques. He also expects the student to become conversant with subjects that are relatively unrelated to his chosen area of concentration. Saying, therefore, that college professors consider the college freshman capable of dealing with new and unusual situations in a competent manner and thinking rationally about them is not unreasonable.
>
> Unfortunately, the college professor is often poorly informed about the true nature of his student's abilities. He assumes that the college student thinks logically. But has that student arrived at the formal operational stage of thought? If not, the professor will probably begin at a level of abstraction the student simply cannot understand.
>
> The evidence available indicates that about 50 per cent of students entering college cannot cope with abstract propositions . . . (4:111)

The STAR program

At Metropolitan State College, an inner city, open-door four-year institution, research indicates that more than 75 percent of students entering the college have not reached the level of formal operations (Killian (3), Smith-Gold and Cohen (9)). During fall semester, 1977, 200 students enrolled in developmental reading classes at MSC were administered a battery of tests to determine their 1) reading level; 2) cognitive functioning level; and 3) critical thinking ability. The tests included the *McGraw-Hill Reading Test* (6), the *Watson-Glaser Test* (12), and a paper-pencil test of seven cognitive tasks (11). The cognitive tasks involved ratio, probability, proportion, combinatorial reasoning, controlling for variables, analogies, and abstractions.

When the results revealed that 75 per cent of the students tested were functioning at a concrete or transitional level, several instructors in the Reading Department at MSC, in concert with the Center for Experimental Studies, set out to develop a program which would gear instruction and materials to the students' present level of cognitive functioning. A secondary emphasis was to raise the students' level of processing so that the student could function more appropriately in traditional college classes. The freshman program was named STAR, an acronym for *Steps to Abstract Reasoning*.

Several strategies were employed in teaching. Initially, a "learning

cycle" approach (2) was devised which included three steps: 1) exploration of concrete materials; 2) discovery or invention of concepts; and 3) application to more abstract materials. Verbal interaction among students was encouraged. Discussion of ideas enabled the "concrete" learners to gain insights from students at the "formal" level. Learning cycles were conducted on the reading process, study reading text books, reading for details, reading for main ideas, skimming and scanning, outlining, reading graphs, and "reading for thinking" skills.

Another strategy included an attempt to match a particular task with related content area materials. This was done because students at the concrete level have difficulty transferring reading/study skills to content area classes. Therefore, materials were solicited from several departments within the college which had high concentrations of freshmen students. All materials for the practice of reading/study skills had practical application to content area instruction. For example, outlining and graph-reading skills were applied to economics, philosophy, biology, and earth sciences texts.

Evaluation

The post testing of an experimental and control group will be conducted in May, 1978. However, in preliminary testing, all 63 students in four developmental reading classes were at either a concrete or transitional level. At the preliminary testing, in the experimental group, 31 per cent moved from either concrete to transitional or transitional to formal. In the control groups, 17 per cent moved in this positive direction.

On the *Watson-Glaser* pre test, there were no significant differences between the experimental and control groups on any of the subtests. On the post test, both groups made significant gains on the subtests ($\alpha = .01$).

On the *McGraw-Hill Reading Test*, the experimental group and control groups also showed significant gains on pre-post measures on reading rate and on total score ($\alpha < .01$ for each).

Conclusions

The following conclusions are based on preliminary results. More complete results will be made available in a future paper by Killian, Smith-Gold, and Cohen. Results so far indicate that students' levels of cognitive processing have increased from concrete to transitional and transitional to formal. Students made significant gains in reading and critical thinking. It is our belief that the gains occurred because of the use of the learning cycle approach and the integration of content area material into the reading/study skills class.

Several implications of this study for two- and four-year open-door colleges are apparent. Because many entering students are functioning at a concrete operational level, they need to be involved actively in learning and problem solving with concrete experiences before progressing to formal,

abstract, logical thought. To alleviate the concrete learners' transfer problem, study skills and reading classes must provide practical application to actual content area materials. Discussions of ideas and reasoning strategies must be encouraged. The Metropolitan State College study indicates that these strategies will lead to student growth in cognitive processing, critical thinking skills, and general reading ability.

REFERENCES

1. Flavell, J. *The developmental psychology of Jean Piaget*. New York: Van Nostrand Reinhard Co., 1963.
2. Fuller, R. and Thornton, M. Workshop on college teaching and the development of reasoning. NSF-AAS Chautauqua Short Course, 1977-78.
3. Killian, R. Cognitive functioning of freshman college students, Unpublished paper, 1978.
4. McKinnon, J.W. The college student and formal operations in *Research, teaching, and learning with a Piaget model*. Norman, Oklahoma: The University of Oklahoma Press, 1976.
5. McKinnon and Kenner, Are colleges concerned with intellectual development? *American Journal of Physics*, 39 (September, 1971), 1048.
6. Raygor, A.T. *McGraw-Hill Basic Skills Systems – Reading*. Monterey, California: CTB/McGraw-Hill, 1970.
7. Renner, J.W. and Lawson, H.E. Promoting intellectual development through science teaching. *The Physics Teacher*, 273 (1973).
8. Smith-Gold, D.A. *The effect of cognitive level development on language awareness following verbal training*. Rutgers, The State University, 1975.
9. Smith-Gold, D.A. and Cohen, E.L. Investigations of cognitive processing of college freshmen, Unpublished paper, 1978.
10. Tomlinson-Keasey, C. A search for the component operations of formal operations. Paper presented at SRCD Convention, April, 1975, Denver, Colorado.
11. Tomlinson-Keasey, C. and Campbell, T. Seven cognitive exams. Unpublished tests, 1977.
12. Watson, G. and Glaser, E.M. *Critical thinking appraisal*. New York: Harcourt Brace Jovanovich, 1963.

A SURVEY OF READING PROGRAMS AND MATERIALS IN CONTENT AREAS IN HIGHER EDUCATION

Craig K. Mayfield
Brigham Young University

A survey of reading programs and materials in content areas in higher education was undertaken because the author began a reading improvement program for law students at the Brigham Young University Law School (3) that became so popular other departments and colleges across campus wanted similar reading programs. The chemistry, psychology, and history departments wanted their majors to improve their reading in their major field. For the law class no materials were available, so a textbook had to be written. (4) The author does not wish to write other books in reading and study skills if material is already available for this type of college student.

The approach was three fold: (1) to identify college programs that teach reading skills in the content areas; (2) to locate any teaching materials including textbooks that might be readily available; and (3) to locate any current literature that might assist the teacher in teaching a course of this type.

Annotated bibliographies were developed to report the information found.

Procedure

A search of the literature included, but was not confined to, ERIC, the Minnesota Retrieval System, NRC *Yearbooks*, WCRA *Proceedings* and nationally disseminated education and media periodicals.

In Spring, 1977, a letter was sent to 382 publishers of textbooks listed in the *Directory of Publishers*. (2) Another 742 letters were sent to reading instructors teaching in colleges and universities throughout the United States and Canada. These names were taken from the July 8, 1977, WCRA membership list sent out by Seymor Prog, WCRA Treasurer. Still another 759 letters were sent to college and university Learning Centers in the

United States and Canada. The latter list was obtained from a study by Coda-Devirian, Enright, Smith. (1)

Results

Of the 382 letters sent to publishers, six were returned because the publisher was no longer in business or had merged with another publisher. From the remaining 376 letters, 351 responses were received either by letter, publishers catalogue, telephone calls or representative visits (96% return).

From the 742 letters sent to reading instructors at the college and university level in the United States and Canada and the 759 letters sent to Learning Centers, a total of 465 responses were received. It is extremely difficult to accurately assess this 31% response as the letter of inquiry asked if they had a reading program for reading content areas or knew of a college or university that had a reading in content areas program. If they did not have a program or did not know of any, no response was required. Also, some could have received two letters, one as a reading instructor and one as a director of a Learning Center and so only one letter of response was necessary. Another overlap could have occurred if two reading instructors from the same college received letters. Then only one would respond. Of the 1,877 letters sent out, a total of 816 responses were received (43% return).

Conclusion

The Survey found that there is a real dearth of material available in reading and study skills, in content areas for college students who are already accepted into a major department and are pursuing a degree in that department. Most content area materials are remedial in nature. However, there seems to be a new trend in reading and study skills in content areas through adjunct courses. An adjunct course is formed by students from a content course who are having trouble keeping up with the course assignments. Those students agree to meet together at a certain time to study for the course under the direction of an adjunct teacher who is a specialist in reading and study skills. The adjunct teacher often attends the content course, takes notes and reads the assignments for the purpose of helping the students attending the adjunct course. In some cases these adjunct courses give credit. One of the major reasons these adjunct courses have been successful is the content teacher must give his permission to have an adjunct course. So full cooperation by the content teacher is received and the adjunct teacher comes in as a helper for the course with no extra work for the content teacher.

Included in this paper are the annotated bibliographies of *Colleges and Universities that Offer Help In Reading and Study-Skills in Content Areas, Bibliography of Textbooks for Reading and Study-Skills in Content Areas at the College Level,* and *Bibliography of Periodicals for Reading in Content Areas at the College Level.*

REFERENCES

1. Coda-Devirian, M., Enright, G., and Smith, G.D., A survey of learning program centers in U.S. institutions of higher education, *WCRA Proceedings of the Eighth Annual Conference*, August 1975.
2. *Directory of Publishers*, National Association of College Stores, Oberlin, Ohio, 1977.
3. Mayfield, C.K., Establishing a reading and study skills course for law students. *Journal of Reading*, 20, 5, January 1977.
4. Mayfield, C.K., *Reading skills for law students*, Brigham Young University Press, 1976.

COLLEGES AND UNIVERSITIES THAT OFFER HELP IN READING AND STUDY-SKILLS IN CONTENT AREAS

Adrian College, *Adrian, Michigan – Study Skills, Janice A. Hoffe.* Pilot programs have begun in mathematics and chemistry to solicit reading teachers to assist in the classroom to help students learn the basic concepts in the two content areas.

University of Alaska, *Anchorage – Kate Sandberg.* Three micro courses (5 week courses, 2 hours weekly) are taught in *How to Read Sciences, How to Read Social Sciences,* and *How to Read the Humanities.*

Albany Junior College, *Albany, Georgia – Special Studies Department, Ann S. Peets.* Located close to a marine base, they are trying a mini-course in technical-type reading instruction at the marine base.

Alberta Vocational Center, *Calgary, Alberta, Canada – Learning Assistance Center, Joan Mulder.* Reading and study skills courses are taught in the area of Nursing Aide and Nursing Orderly. They are currently doing in-depth work in reading for mathematics using the multimedia approach.

Aquinas College, *Grand Rapids, Michigan – Student Tutoring Services, Carolyn H. Clemons.* In-service instruction is given to their staff of fifty-five faculty members in reading and study skills to aid them in teaching specific content areas.

Brigham Young University, *Provo, Utah – Learning Services Center, Craig K. Mayfield.* A course in reading and study skills is taught to law students.

California State University, *Dominguez Hills, California – Center for Skills and Assessment, Randall A. Silverston.* They are in the process of developing mini-courses, programs, and tutorial functions based on content areas.

California State University, *Northridge, California – Learning Resource Center, John Hartzog.* Adjunct courses in chemistry, accounting, biology, engineering, English, and linguistics are offered.

University of California, *Berkeley, California – Learning Resource Center,*

Martha Maxwell. Many adjunct courses are offered in such courses as mathematics, sciences, English, history, etc.

University of California, *Irvine, California – Learning Skills Services, Barbara Tomlinson.* Adjunct reading and study skills classes are offered to students wanting help in various content areas. This program was written up in the *Proceedings of the Ninth Annual Conference of WCRA* (Roy Sugimoto, Editor).

The Christopher Newport College of the **College of William and Mary**, *Newport News, Virginia – Basic Studies and Communications, Alive F. Randall.* Programs to help students improve their reading and study skills in content areas are offered. A laboratory course for History 101 (Western Civilization) is offered. In the general reading class, work is required in the physical sciences and social sciences.

Clemson University, *Clemson, South Carolina – College Reading Laboratory, Yvonne Jones.* Reading in mathematics, science, and foreign language is taught as part of their study skills course.

Cochise College, *Douglas, Arizona – Vocational Reading Project, Mary Lee Shelden.* They have develped a course to teach reading in the field of aviation.

Diablo Valley College, *Pleasant Hill, California – Learning Center, Karl Staubach.* Separate from their regular reading and study skills course is a program to help students with their homework in mathematics and bioscience.

Eastern New Mexico University, *Portales, New Mexico – Learning Assistance Center, Carol Crider.* A reading education class covers teaching in content areas.

El Camino College, *Via Torrance, California – Learning Assistance Center, William B. Carnahan.* One mini-course is offered to help prepare and sustain students in social or behavioral science courses.

Great MacEwan Community College, *Edmonton, Alberta – Student Study Services, Karl H. Homann. Advanced Reading in the Sciences* is designed for and attended by nursing students.

University of Idaho, *Moscow, Idaho – Learning Resource Center, Jeanette Driskell.* They are attempting to integrate study skills techniques into their mathematics and technology tutoring program.

University of Illinois *at Chicago Circle, Chicago, Illinois – Student Counseling Center, Davis R. Richie.* Non-credit courses are offered to accommodate students whose interests are in the sciences, literature, philosophy, history, anthropology, etc. Focus is on helping students understand scientific texts, laboratory experiments, and test questions in their respective areas.

Metropolitan State College, *Denver, Colorado – Reading Department, Ladessa Yuthas.* Several combined reading and study skills courses are taught, one with Civil Engineer Technology and one with the Biology Department.

Nassau Community College, *Garden City, New York – Department of Reading Services, Thomas E. Nealon.* In their *Introduction to College Reading* course they are experimenting with PLAID Series by Irwin Publishers. They have found so far that the program has a special appeal to students in business, data processing, and retail sales.

New York City Community College of the **City University of New York,** *Brooklyn, New York – Developmental Reading, Anne Eisenberg.* A course in reading and study skills is taught to engineering technology students. Materials are written by those teaching the course. They are also interested in adjunct courses in science.

University of Northern Colorado, *Greeley, Colorado – Reading-Writing in the Content Fields Program, Robert A. Pavlik.* Instruction is directed to the teacher. The program develops materials and methods that will let the student read and write his assignments in the content areas successfully. Weekly seminars for the faculty are held to develop efficient methods of instruction. Biology, business, mathematics, and psychology make up the core of the program's research and development.

University of Oregon, *Eugene, Oregon – Center for Self-Development, Jacqueline Bonner.* Adjunct skills, classes for beginning accounting, political science, chemistry, and sociology are being introduced to students who need help in these areas.

Paris Junior College, *Paris, Texas – Learning Skills Center, Jimmye R. Hancock.* Helping students improve reading in the content areas is the primary objective of their Learning Skills program. They use a standard reading and study skills textbook, then supplement with other texts when teaching reading in content areas such as humanities, social studies, and science.

Prince George's Community College, *Largo, Maryland – Instructional Development, Gary K. Probst.* In their college reading skills course, a unit in reading skills in social studies is taught.

Queensborough Community College of the **City University of New York,** *Bayside, New York – Department of Basic Educational Skills, Michael Elkin.* Reading and study skills courses are being taught in academic subjects such as *Reading and Sociology, Reading and Mechanical Technology,* etc. Another course, *Advanced Reading and Study Skills in Content Areas,* is also being taught.

University of Richmond, *Richmond, Virginia – Center for Psychological Services and Academic Skills Program, Jean N. Dickinsen.* They have moved from using their own staff in skills of academic areas to the Baldridge Reading and Study Skills, Inc., 14 Grigg St., Greenwich, Connecticut.

Rockland Community College, *Suffern, New York – College Skills Center, Margaret Martin.* A developmental program is offered that incorporates the developmental reading, writing, mathematics, and study skills. The course

provides laboratory work with para-professionals as well as professional instructors.

San Diego City and Evening Colleges, *San Diego, California – Independent Learning Center, Gwyn Enright.* Learning skills mini-courses are being developed for mathematics, humanities, social sciences, and natural sciences.

University of Texas, *Austin, Texas – RASSL/Learning Services, Pat Heard.* Part of the program is the Self-Help Lab that offers help in how to study languages, literature, mathematics, science, and social science. It also has mini-groups in these same areas.

University of Wisconsin, *Green Bay, Wisconsin – Skills Learning Programs, Stan Rickert.* Currently they have programs designed to improve reading and study skills in the areas of social science and natural science and are developing study skills programs in mathematics.

BIBLIOGRAPHY OF TEXTBOOKS FOR READING IN CONTENT AREAS AT THE COLLEGE LEVEL

ADAMS, W. Royce. *Developing Reading Versatility.* Second Edition, New York: Holt, Rinehart and Winston, 1977. Chapter Four has a thirty-one page section, "Skimming and Scanning Textbook Chapters" which includes examples and exercises.

ADAMS, W. Royce. *How to Read the Humanities.* Glenview, Ill: Scott, Foresman and Company, 1969. This book centers around four steps: 1) Explore, 2) Check the vocabulary, 3) Analyze for comprehension, and 4) Synthesize for understanding. Each step is applied directly to learning how to read efficiently in the humanities. Chapters 3-5 are concerned with vocabulary building.

ADAMS W. Royce and Charles M. Brown. *How to Read the Sciences.* Glenview, Ill: Scott, Foresman and Company, 1970. This book centers around four steps: 1) Explore, 2) Check the vocabulary, 3) Analyze for comprehension, and 4) Synthesize for understanding. Each step is applied directly to learning how to read efficiently in the sciences. Chapters 3-5 are concerned with vocabulary building.

ADLER, Mortimer J. and Charles Van Doren. *How to Read a Book.* New York, N.Y.: Simon and Schuster, 1972. A reading improvement book that includes chapters on how to read literature, stories, plays, poems, science, mathematics, philosophy, and social studies.

ALLEN and WIDDOWSON, *English in Physical Sciences;* GLENDINNING, *English in Mechanical Engineering;* MACLEAN, *English in Basic Medical Science;* MOUNTFORD, *English in Working Practice;* Oxford University Press, Inc., 1976. This is a series of books called *English in Focus.* Each book

has eight units for reading comprehension, use of technical language, and free readings.

AYRES, Donald M. *English Words from Latin and Greek Elements.* Tuscon, University of Arizona Press, 1974. "Greek word elements are treated by discipline": religion, literature, law, science. The format is a series of lessons but is more captivating as a reference or for browsing. Provides practice in recognizing word parts, and using their literal meanings and context clues for definitions.

BAKER, William O. *Reading Skills.* Englewood Cliffs, New Jersey, Prentice-Hall, 1974. Chapters 1-16 offer information on how to increase reading efficiency for study material and textbooks. Chapters 17-24 deal with important skills that are often neglected titles as "Reading Great Literature," "Reading Poetry," etc.

BASINGER, Louis F. *The Techniques of Observation and Learning Retention: A Handbook for the Policeman and the Lawyer,* 1973. This easy-to-read handbook is written primarily to train police officers in techniques of observation and learning retention without the necessity of classroom instruction.

BENJAMIN, Jules R. *A Student's Guide to History.* St. Martin's Press, Inc., 1975. Explains the purposes and uses of historical study and how historians do their work; demonstrates through abundant examples how to read history assignments, take meaningful notes, participate profitably in classroom discussions, organize and write essay examinations and short papers, and prepare a formal research paper — choose a topic, use the library to gather information and organize and present the results.

BERGINGAUSE, Arthur F. and Daniel K. Lowenthal. *The Range of College Reading.* New York, N.Y.: Houghton-Mifflin, 1967. This book includes forty-five selections taken from textbooks in the fields of liberal arts, science, business and technology. Levels of difficulty in questions and vocabulary style are included.

BROWN, Charles M. and Royce W. Adams. *How to Read the Social Sciences.* Glenview, Ill: Scott, Foresman and Company, 1968. This book centers around four steps: 1) Explore, 2) Check the vocabulary, 3) Analyze for comprehension, and 4) Synthesize for understanding. Each step is applied directly to learning how to read efficiently in the sciences. Chapters 3-5 are concerned with vocabulary building.

CANTOR, Norman F. and Richard I. Schneider. *How to Study History.* Northbrook, Ill., AHM Publishing Corp., 1967. The authors are teachers of history and have developed basic rules and principles of historical study for beginning college history students.

CHERINGTON, Marie R. *Improving Reading Skills in College Subjects.* New York, N.Y.: Columbia University Press, 1961. A manual of seventeen exercises to improve reading skills in college subjects. The general idea underlying this book is that college subjects present many types of material which

require a variety of methods for reading them. Selections from nine major college subjects are included.

EISENBERG, Anne. *Reading Technical Books.* Prentice-Hall, 1978. This book teaches reading and study skills to engineering technology students in college.

ESTES, Thomas H. and Joseph L. Vaughan. *Reading and Learning in the Content Classroom.* Allyn and Bacon, Inc., 1978.

FISHER, Joseph A. *Reading to Understand Science.* McGraw-Hill Book Company, 1970. The purpose of this text is: 1) To provide reading exercises which develop skills necessary for effective reading in science; 2) To provide students with insight into the kinds of thinking involved in scientific writing; 3) To direct students through a series of well-constructed exercises that transfer their new skills to any science. The student gets training in grasping the scientific principles or main ideas of passages excerpted from college texts in the physical and social sciences. The passages are graded from easy to difficult.

FORGAN, Harry and Charles Mangrum II. *Teaching Content Area Reading Skills: A Modular Preservice and Inservice Program.* Columbus, Ohio: Charles Merrill Publishing Co., 1976. Using the modular approach this program identifies eight to ten reading skills needed to read material in each of the various content areas. They have developed modules in art, business education, English language arts, foreign language, health, homemaking, industrial arts, mathematics, music, physical education, science, social studies, speech, and drama.

HERBER, H.L. *Teaching Reading in Content Areas.* Englewood Cliffs, New Jersey: Prentice-Hall, 1970. Even though this is a book for secondary school teachers, it is being included because so many college instructors referred to it. The book is a guide to teachers of school subjects in English, social studies, mathematics, and science who wish to teach learning skills along with content.

HOWLAND, Hazel, Lawrence Jarvie, and Leo Smith. *How to Read in Science and Technology.* Harper & Row, Publishers, 1943. This is one of the earliest works in reading in science and technology for high school and college. Certain reading skills are explained and many exercises in the science field are included. Examples of skills taught are reading for details, reading for main ideas, reading to solve problems, reading to understand and interpret graphic materials, etc.

LEFEVRE, Carl A. and Helen E. Lefevre. *Reading Power and Study Skills for College Work.* Harcourt Brace Jovanovich, Inc., 1978. This is a basic textbook for a College Reading Improvement class. The reading selections are taken from various course subjects such as history, zoology, sociology, education, art, and law.

MAYFIELD, Craig K. *Reading Skills for Law Students.* Provo, Utah, Brigham Young University Press, 1976. A book designed to teach law stu-

dents to read law cases faster. Includes a study technique for law cases and law periodicals.

MORGAN, Clifford T. and James Deese. *How to Study*. New York, New York, McGraw-Hill Book Company, 1969. This text on study skills includes a chapter on how to study languages and mathematics.

PAUK, Walter. *How to Study in College*. Boston, Mass., Houghton Mifflin Co., 1974. The text is basically a study skills text. Pauk has invited various specialists in their respective content areas to write chapters on "How to Study Mathematics," "Studying Science: As a Scientist Sees It," and "How to Master a Foreign Language."

REITER, Irene M. *The Reading Line: English Language and Literature; Science; Mathematics; Social Studies; Business; Vocational-Technical*. NYT Cambridge Book Co., 488 Madison Ave., New York, N.Y. 10022, 1976.

ROBINSON, Francis. *Effective Study*. New York, N.Y., Harper & Row, Publishers, 1970. This is a text on study skills; however, one chapter is included on how to study mathematics.

ROBINSON, H. Alan. *Teaching Reading and Study Strategies: The Content Areas*. Allyn and Bacon, Inc., Longwood Division, 470 Atlantic Avenue, Boston, MA 02210, 1975.

SHEPHERD, David. *Effective Reading in Science*. Row, Peterson, 1969.

SMITH, Donald E. P., Carl Haag, Roderck A. Ironside, Rosemarie E. Nogel, Ann R. Cross, Daniel G. Sayles, and John E. Valusek. *Learning to Learn*. New York City, N.Y., Harcourt, Brace and World, Inc., 1961. This book is a reading and study skills manual. It includes: "Lesson 13: How Learning Styles and Subject Requirements Differ"; "Lesson 14: Suggested Study Procedures — 1) Chemistry, 2) Mathematics and Physics, 3) Foreign Languages"; and "Lesson 15: Applications of Survey Q4R — 1) Economics, 2) History, 3) Psychology, 4) Sociology, 5) Zoology."

SMITH, Henry P. and Emerald V. Dechant. *Psychology in Teaching Reading*. Englewood Cliffs, N.J., Prentice-Hall, Inc., 1961. This book provides an understanding of the psychological bases of the reading process. It includes a chapter on reading in content areas: language arts, mathematics, sciences, and social studies.

SPACHE, George D. and Paul C. Berg. *The Art of Efficient Reading*, Third Edition. The MacMillan Company, Collier-MacMillan Limited, London, 1978. A study reading skills and reading book with one chapter on how to read college subjects.

STRANG, Ruth, Constance M. McCullough and Arthur E. Traxler. *The Improvement of Reading*. New York, N.Y.: McGraw-Hill Book Co., 1967. The book is designed to serve as a text for a basic reading course for prospective teachers who need to see the scope of reading instruction regardless of grade level. It has a chapter on each of the content fields.

STRANGE, Jack R. and Sallie Minten Strange. *Reading for Meaning in*

College and After. Monterey, California, Brook, Cole Publishing Co., 1972. This book helps a reader comprehend the "meaning" of what he reads. Chapter 3 is "How to Read Primary Sources — Essays and Books"; Chapter 4 is "How to Read Scientific and Critical Articles"; and Chapter 5 is "How to Read Literature."

TAYLOR, Halsey P. *Reading for Meaning*. New York, N.Y.: Harcourt Brace Jovanovich, 1975. This book is mainly for understanding the printed page. Chapter 1 is "How to Read a Paragraph." The last chapter, Chapter 8, is entitled, "On Reading Imaginative Literature."

WEST, Gail B. *Teaching Reading Skills in Content Areas: A Practical Guide to the Construction of Student Exercises*. Sandpiper Press, Inc., P.O. Box 19225, Orlando, Florida 32814, 1974.

BIBLIOGRAPHY OF ARTICLES FOR READING IN CONTENT AREAS AT THE COLLEGE LEVEL

AHRENDT, K. M. and Haselton, S.S., Essential reading skills in bookkeeping. *Journal of Reading*, January, 1973, 314-317. The authors feel the content area teacher is the person best qualified to teach reading and study skills because he makes the assignment meaningful to the students.

BASILE, D.P., and Long, J. Teaching reading skills in the community college classroom. A report prepared at San Diego State University Study Skills Center. (1976) (ED 134 925). Offers junior college instructors in the content areas some techniques for improving their students' reading skills. Includes materials for assessing students' reading skills and concerns, helping students acquire necessary reading skills to complete assignments.

BEDILLION, C. Reading and study skills programs in higher education: an evaluation of one university's needs. Ph.D. Dissertation, University of Michigan, 1974. Investigates hypothesis that reading instruction contributes to higher grades in college. Finds development of effective study habits and positive attitudes is critical to maintaining good grades in college.

BENZ, D.A. Observations of academic performance by low achieving college freshmen following instruction by academically successful students trained to teach reading and study skills techniques. Wisconsin State Universities Consortium of Research Development, Stevens Point, January, 1970. (ED 054 075) Investigator trained 12 juniors with at least a 3.0 grade point average in twelve one-hour sessions. Soon after a session each student instructor spent an hour assisting the student assigned to him. Student instructors were trained in learning principles and study skills. No significant differences were found between performance of experimental and study groups. Further research recommended.

BERGMAN, I.B. Integrating reading skills with content in a two-year college. *Journal of Reading*, 20, January, 1977, 327-329. Describes program at Queensborough Community College of the City University of New York, part

of which is the integration of reading skills with content area classrooms. Describes differing arrangements with various departments which would allow cooperation between the Reading Lab and the other departments: "Back-to-back" classes — reading and content area class scheduled so that students can enroll in both voluntarily. A variation of "back-to-back": reading instructor coordinates with several sections of same class. "Mini course": several one hour study sessions in coordination with content area class. This cooperation has benefited content area classes and enhanced the program.

BOGUE, C. How to teach study skills in high school and college. Paper presented at the International Reading Association (21st, Anaheim, California, May, 1976). (ED 126 470) Separates study skills into two categories: 1) techniques for study, and 2) applied study. Maintains that applied study skills require sequential skill development using material near student's reading level. Suggests both reading and content area instructors cooperate in helping students to learn effectively.

BULLERMAN, and Franco, E.J. Teach content material but teaching reading, too. *Journal of Reading*, Volume 19, October 1975, 21-23. This article explains how one school system designed a flexible training program for teaching reading in the content areas, which included an inservice training program for teachers.

CARNEY, J.J. and Lasinger, W. Reading and content in technical-vocational education. *Journal of Reading*, 20, October, 1976, 14-17. Describes a program designed to integrate instruction in reading and in content and to measure the resultant content learning of technical-vocational college students enrolled in an auto-mechanics class. Seven students in the experimental group were given specific instructions in how to read materials; the seven students of the control group were given no instructions. At the end of the semester the experimental group scored significantly higher than the control group on the applied test. There were no significant differences between the groups on the cumulative test.

CARPENTER, T. and Jones, Y. Transferring reading and study skills to the content area. *Twenty-fifth Yearbook of the National Reading Conference*, 1976, 104-107. Students enrolled in developmental reading courses receive six weeks of instruction in individualized programs in reading skills, and eight weeks were spent applying the skills in textbooks, paperbacks, and journals. Study skills transferred to the content area reading assignments as a result of the direct application and students' reading skills increased as well.

CARTER, H. L. J. Improving reading in the subject matter areas. *Ninth Yearbook of the National Reading Conference*, 1960, 67-71. Three aspects of reading are essential to a mastery of subject matter in the content field. The student must identify, interpret, and evaluate words and concepts. In order to achieve these skills, mental content resulting from experience is a fundamental requirement.

CASH, P. Using content area materials for reading and studying teaching. *Reading Improvement*, 1973 (Spring), Volume 10, 17-19. Reports a study conducted at Lehman College of the City University of New York. Describes a three-component kit (text, notes, tests) used to teach study skills directly related to the content areas. The study showed improvement in organization of notes, in reading, analyzing, and remembering information, and improved ability to take exams.

CHRIST, F.L. Systems for learning assistance: learners, learning facilitators, and learning centers. In Christ, Frank L., Ed., *Interdisciplinary Aspects of Reading Instruction. Proceedings* of the Fourth Annual Conference of the Western College Reading Association (Los Angeles, Apr. 1973). Describes a Learning Assistance Center developed as a system with its concomitant characteristics, and functions.

DAHLKE, A.B. and Schnier, R.R. Helping students 'STA' in college. Paper presented at the National Reading Conference (1974). (ED 123 624) Describes the Student Teaching Assistant (STA) program at the University of Wisconsin designed to provide peer tutors for interested students. A workshop is held each summer for about 20 academically able students.

DONOVAN, G.L. Liaison between the college study skills center and counseling services in the community college. Paper presented at the conference of International Reading Association, Anaheim, California, May, 1970. (ED 045 285) Describes the role of counselors in helping students in self-assessment and self-discovery. Part of this active role involves offering study skills workshops and maintaining a Learning Skills Center.

EDWARDS, K. A. Self-managed studying in college courses. 1975. (ED 124 095). Students in an Introductory Psychology course were taught the principles of "adjustment" using self-management techniques and were required to conduct a self-management project. Reports four student projects designed to improve study skills through use of Premack principle and stimulus control. Reports indicate success in achieving desired terminal behavior.

ESTES, T.H. Applying research in reading to classroom instruction in social studies. Paper presented at the International Reading Association Conference, Anaheim, California, 1970. (ED 041 720). This paper focuses on three questions: 1) What reading skills are important to social studies achievement? 2) How can these skills be operationally defined for research and practice? and 3) How can the application of such research findings be effected? A five-step applicative research model is presented.

ESTES, T. H. The effect of advanced organizers upon meaningful reception, learning, and retention of social studies content. *National Reading Conference*, 1972, 16-21. This study sought to answer two questions: 1) Does the structured overview as proposed by Barron have the same or similar effects on reading comprehension as Ausubel's advanced organizer? and 2) Is the facilitative effect of both devices a function of the relationship between the difficulty of the learning passage and the reading ability of the learner?

FAY, L. Reading study skills: math and science. *Proceedings of the Annual Convention of the International Reading Association*, 1965, 10, 92-94. The good student develops control not only of study techniques but of himself. In the process of developing mastery of self through study, the student also gains insight into his own strengths and weaknesses. However, while study involved these important personal aspects, the concern of this discussion is with more specific applications of the problems of reading study skills in the areas of math and science.

FERGUSON, H. and Harding, J. But do they know how to study? Nova University, Fort Lauderdale, Florida, June, 1974. Practicum presented to the university in partial fulfillment of Ed.D. Degree. (ED 094 818). Presents a survey of 438 freshmen at the College of the Mainland Texas City, Texas. The study showed only one in four were trained in effective study methods. Recommends training in the first year curriculum.

FOXE, E. An experimental investigation of the effectiveness of a brief study skills program for freshmen college chemistry students. *Dis. Abstr.*, 1967, 27 2876.

GOLDMAN, R.D. and Warren, R. Discriminant analysis of study strategies connected with college grade success in different major fields, *Journal of Educational Measurement* 10, (1973) 39-47. Reports a survey (using a study techniques questionnaire) of 538 students enrolled in upper-division college classes in four major fields and having both above and below average scores. The major differences were thought to be "clerical diligence" and "cognitive activity," with successful students more likely to be diligent and more likely to transform actively scholastic material.

HAWTHORNE, L. C. Teaching reading skills through the materials of science. *Proceedings of the Annual Convention of the International Reading Association*, 1970. Identifies the skills needed in reading scientific materials and suggests techniques and methods for improving reading in the area of science. A teacher of science must be a teacher of reading, one who knows how to deal with vocabulary, style, typography, level of concepts and comprehensibility involved.

HOLLANDER, F.H. The process of reading in mathematics and science. *Reading: Putting All the Cards on the Table, Proceedings of the Western College Reading Association*, 1972, 66-71. A technique to enable students to read with comprehension and at a reasonable rate in the content areas of science and mathematics.

HOWELL, S.A. Plans for education 100: a reading and study skills course at Floyd Junior College. Paper presented at the National Reading Conference, Tampa, Florida, December (1971). (ED 057 997). Outlines course objectives and structure. The aim of the course is to give students practice in college study skills using instructor prepared or commercially prepared tapes. Each faculty member prepares taped lectures, an excerpt from his text, and a sample test over his materials.

JOHNSTON, J. Reading in the vocational classroom. *Journal of Reading*, 18, October, 1974, 27-29. Reports of project in which a reading teacher and a cosmetology teacher work together in the vocational classroom at Athens Area Vocational-Technical School in Georgia. Reports a joint analysis of the specific reading skills required. The reading teacher then devised specific strategies for reading which were directly related to the course content. Recommends parallel strategies for other vocational areas.

KARLEN, R. Developing reading ability in the content fields. Paper presented at the Lehigh University Reading Conference, Bethlehem, Pennsylvania, March, 1971. (ED 050 901). Recommends ways teachers can guide study in content areas. Includes five major stages of a developmental reading lesson and a list of useful study skills and strategies.

KEETZ, M.A. The effect of incorporating reading and study skills instruction into a college academic course. *Twenty-second Yearbook, National Reading Conference*, Volume I, 1973, 270-276. This study deals with reading and study skills instruction in a social foundations course at Pennsylvania State University.

KISTULENTZ, A.C. An analysis of two approaches used in teaching reading and study skills improvement in a two-year commuity college. Ed.D. Dissertation, Penn State University, 1975. (ED 117 672). A study of 80 students in a college preparatory program for students with poor high school achievement or for returning students. Vocabulary and comprehension materials used in one group were taken from content area texts, and those used in the other group were traditional materials used in the reading lab. Both groups made significant gains on the *Nelson-Denny* reading test. No significant differences were noticed in grade point average. There was a significant difference in favor of the experimental group in science classes, but not writing or math.

KOENKE, K. Reading in content areas — ERIC/RCS. *Journal of Reading*, Volume 21, February, 1978, 460-462. Ideas are presented which will help an instructor to teach more effectively in content areas: 1) know the reading levels of both students and classroom textbooks, 2) help students to obtain more from the required textbook by introducing the textbook, 3) make the assignments clear and concise, 4) encourage students to read for recreation, 5) group students for differentiated instruction, 6) help poor readers learn adequate reading skills.

KOLZOW, L. Reading in the content areas in the two-year college or how to get your foot in the door. *Journal of Reading*, 16 (1962), 46-49. Describes the necessity for expanding the reading teacher's function into the content areas and makes suggestions for overcoming obstacles by offering content teachers information and assistance.

LAFFEY, J.L. Future directions for research in the content areas. *Proceedings of the Annual Convention of the International Reading Association, 1970.* Presents the scope and rationale for reviewing research in reading in the content fields. Research on reading in the language arts, social studies,

mathematics and science and specific research reports which have dealt with readibility and the relationship between reading, spelling, listening, speaking, and writing are reviewed. Research which has dealt with the relationship between general reading ability and achievement in science, mathematics, and social studies is also discussed. Research reports which have dealt with the influence of teaching reading on achievement in the content subjects are analyzed and reviewed. Recommendations include suggestions for involving teachers and teacher related variables in future research. Also some research should be focused on variables related to the manipulation and presentation of instructional materials.

LEEDS, D.S. Summary of research related to reading in the content areas — science and mathematics. *Journal of the Reading Specialist*, 1970, 10, 50-63. Presents in detail a synopsis of several studies which explore methods and materials for teaching reading in the content areas.

LUKENBILL, M.D. The role of the reading teacher in an interdisciplinary program in the junior college. *Twenty-first Yearbook, National Reading Conference*, Volume II, 29-32. At Miami-Dade Junior College the reading and studies program consists of a chairman and twenty staff members who represent five disciplines: English, social science, natural science, psychology-counseling, and reading. One member of each discipline is on an interdisciplinary team to help the instructors with their reading and study skills in that particular discipline.

MALONEY, J.D. Individualized approach to community college reading and study skills. Paper presented at the annual meeting of the International Reading Association, New York City, May 1975 (ED 102 524). Presents a detailed description of an individualized reading program developed at Ohlone College, Fremont, California, designed to help students become independent learners in their content area courses.

MALONEY, J.D. Developing independent learners in the community college. *Journal of Reading*, 17, (1974) 457-461. Describes reading program at Ohlone College, California. As part of this program author produced fifteen video tapes on study skills, including such topics as setting up a study schedule, reading a textbook chapter, and how to remember better. Video tapes have accompanying worksheets and guide sheets. Many individual content area instructors use these tapes in their classrooms to teach their students the skills.

MANZO, A.V. and Sherk, J.K. Reading and languaging in the content area. Unpublished manuscript, University of Missouri, Kansas City, 1977.

MAYFIELD, C.K. Establishing a reading and study skills course for law students. *Journal of Reading*, 20, January, 1977, 285-287. A detailed explanation of how a reading and study skills course was established at a law school. A specific technique for studying law cases is explained along with a technique for underlining to aid in writing briefs.

MAXWELL, M.J. Assessing skimming and science skills improvement.

Paper presented at the National Reading Conference, 1968 (ED 027 175). Describes a program developed for skimming and scanning from science, social science texts, and essays. Tested this program on students in reading classes. The findings are as follows: 1) many students cannot locate main ideas quickly; 2) students preferred to scan for details than skim for major points; 3) rapid scanning speeds association with higher accuracy; 4) students would not skim or scan unless pushed for time.

MCCLELLAN, D.A. and McClellan, L. Reading and study skills which predict success in freshman biology. *Proceedings of the Sixth Annual Conference of the Western College Reading Association*, April 12-14, 1973, 115-120. As a result of numerous investigations it was concluded that a background of scientific terminology and mathematics terminology is of a major importance to success in a general college course in biology.

RAUCH, S.J. An interdisciplinary approach to teaching reading. Paper presented at the Twelfth Annual Meeting of the College Reading Association, Boston, Mass., March 1969 (ED 029 765). Freshmen in a history course at Hofstra University were divided into two groups of fifteen each. One group took history and study skills using history materials. The other group took only history. The group getting study skills scored 16 percentile points above the other group on the *Cooperative English Test*, but no significant differences were noted in the course grades of the two groups.

RILEY, J.D. and Pachtman, A.B. Reading mathematical word problems: telling them what to do is not telling them how to do it. *Journal of Reading*, 21, March, 1978, 531-534. How a reading guide can provide the specific help a student needs in working on mathematical word problems.

ROBINSON, G.G. Study skills required in 'relevant' biology courses. *National Reading Conference*, 1971, 249-252. The diversity of biology courses has increased in recent years. The presence of this array means that the knowledge that one individual has of the study skills required in college biology courses relates only to a minute portion of the spectrum. At the University of South Florida they have separate introductory biology courses for majors and non-majors.

ROSE, R.R., Demicell, J. and others. The learning assistance program. *Reading Improvement*, 10 (1973), 51-53. Describes materials and process of workshops which assist students in applying study skills to actual course work. Instructors recommend workshops and are becoming more aware of readability of textbooks as opposed to the reading ability of their students. Greater cooperation between the Reading Lab and academic classes results. Study skills workshops are also offered to faculty and staff — to give faculty the reading skills they can pass along to the students. Speed reading workshops are also offered to faculty.

SCHLEICH, M. and Rauch, S.J. Combining a program of reading improvement with the study of history, Dec. 1967, (ED 016 570).

SCHULWITZ, B.S. (Ed.) Teachers, tangibles, techniques: comprehension of

content in reading. *Eighteenth Annual Convention of the International Reading Association*, 1975.

SINGER, H. Factors involved in general reading ability and reading in the content areas, *Nineteenth Yearbook of the National Reading Conference*, Volume I, 1970, 295-305. This review of research on factors involved in general reading ability and reading in the content area organizes research on general reading ability into a developmental frame of reference and reviews research in the content areas.

SKILLMAN, A.G. The effect on mathematics achievement of teaching reading in a mathematics class at Casper College. *Dissertation Abstracts*, 33, February 1973. The problem investigated in this study was the effectiveness of teaching a college mathematics class by a method that stressed instruction in reading and the effect on mathematics achievement of training mathematics teachers to teach reading. The major conclusions were: 1) It is possible to obtain better achievement in mathematics by emphasizing reading techniques; 2) The teacher's attitude or interest has an effect on the effectiveness of emphasizing reading in the mathematics classroom; 3) The ACT mathematics test is not a good predictor of success for Casper College students in mathematics classes where gain in mathematics achievement is used as grading criterion.

SOLL, L. Learning by doing. *Journal of Reading*, 15 (1972), 496-499. Points to lack of "carry-over" from instruction in study skills to the academic classroom and describes a reading program at Baruch College designed to coordinate reading classes with specific required freshmen courses. Describes process of selecting and instructing psychology and management students who score low on a standard reading test. An informal inventory showed students very positive about the program.

STRANGE, M. and Allington, R.L. Considering text variables in content area reading. *Journal of Reading*, Volume 21, November, 1977, 149-152. The article states a plan for the evaluation of reading assignments which helps the teacher identify those who will need teacher intervention, and suggestions are given about the type of intervention.

TANKERSLEY, G. The development of selected study skills in the social studies. *Dissertation Abstracts*, 1965.

TOMLINSON, B. and Tomlinson, M. Integrating reading and study skills into college biology. Paper presented at the annual meeting of the National Reading Conference, 1975 (ED 124 903). Describes reading and study skills adjunct course which focused on the methods and materials of the Introductory Biology Course and attempted to build student skills for later independent science reading. This was a voluntary no-credit course which met for three hours per week. Significant achievement by the adjunct class was indicated in the preliminary study.

TOMLINSON, B.M. and Green, T. Integrating adjunct reading and study classes with the content areas. *Proceedings of the Ninth Annual Conference of*

the Western College Reading Association, 1976, 199-203. A simple and effective program to insure unified presentation of study skills in a context which allows immediate use, habituation, and resultant grade improvement. Skills instruction is briefly discussed.

TWINING, J.E. Content area reading skills and the community-junior college. *Journal of Reading*, 15, February, 1972, 347-350. Discusses the need for introducing reading into the content areas in the community college.

VACCA, R.T. Development of a functional reading strategy: implications for content area instruction. *Journal of Educational Research*, 69, November, 1975, 108-112. Readiness to read content area assignment: structured overviews, *Journal of Reading*, 20, February, 1977, 387-392. This last article expresses a way of helping classroom teachers to clarify their content objectives.

WILLIAMS, R. T. and Kaman, M.A. A model for the development of a reading and study skills inventory for every content area. *Proceedings of the Eighth Annual Conference of the Western College Reading Association*, 1975, 211-216. Presents a model for the development and implementation of the RASSI. Says it should include a readability analysis of instructional materials, the construction of group and individual reading inventories based upon skills required by the instructional materials and identified by instructors as necessary for success, and the development of an examiners manual and interpretation guide.

WRITING APPREHENSION

Jo Ann Cope
University of Texas at Austin

Anxiety about writing clouds a person's image of himself as a writer and his potential pleasure in the act of writing; it cramps his academic and career choices; and it taints the quality of his writing style. Research into the effects of writing anxiety is only beginning. Little is known about its etiology and less about its frequency and extent, although most teachers of writing probably hold strong opinions on the subject. My objectives here are to describe the characteristics of writing anxiety and its effects upon students' attitudes, behavior and writing style; to provide you with methods for diagnosing it, including a self-report scale; and to make suggestions for alleviating it.

Characteristics of writing apprehension

The major current research on writing anxiety is being conducted by Dr. John Daly of the Department of Speech Communication at the University of Texas at Austin. Daly has coined the term "writing apprehension" to describe a general tendency to anxiety which is triggered by the specific situation of writing (6). He and Miller (7) devised a self-report which measures attitudes, feelings and avoidance behaviors associated with writing which they report to be a "stable one factor measure with extremely high reliabilities and low correlations with other measures, both of anxiety and personality." (6:176)

Using this scale, Daly (8) has discovered that fewer writing-anxious students enroll in advanced composition courses and most report an unwillingness to do so. They choose majors which require little writing (9) and view occupations which they believe involves writing as less desirable. (10)

Daly (8) reports that writing-anxious people don't feel they've succeeded in writing in the past and anticipate failure in writing courses. There is little or no correlation between writing anxiety and verbal scores on the Scholastic Aptitude Test (8); but writing-anxious students did score less well on a test of mechanics and grammar (4) and their writing was rated poorer in quality than that of less anxious students. (3)

More men are anxious about writing than women (8). Teachers expect

less, both in writing and in other school performance, of these students, although they expect more of anxious men than women. (5)

Daly (5) quizzed one group of teachers who hypothesized that overgrading on mechanics, disagreement with students' ideas, poor assignments, embarrassment of students and the association of writing with punishment could cause writing apprehension. Students' poor skills and low self-esteem, as well as poor models, were also possible causative handicaps. (5)

Daly (6) has found that fearful students chose neutral and flat words, while those free from nervousness chose more vigorous and expressive vocabulary. Writing-anxious students wrote shorter essays and qualified their writing less (3).

Other research supports and broadens Daly's findings. As early as 1930 the German psychoanalyst Paul Federn (12) deduced that two kinds of poor style are characteristics of "frightened" writing. If the writer has not resolved conflicts and questions concerning his subject matter, his writing may be characterized by impersonal wording, syntax which delays and/or obfuscates the main idea, overgeneralization and overuse of absolutes and expletives. A second type of "neurotic" style, a "permanent and generalized . . . 'communication neurosis'" (12:686) or writing phobia, Federn hypothesizes may be caused by a fear of revealing oneself through one's writing which, in extremes, amounts to "stage fright" or "writer's block." Federn is careful to discriminate a "neurotic" writer from one whose errors are caused by simple indifference to correct language. The neurotic style is impersonal, self-hiding; the opposite is true of the self-expressive but careless writer.

Another psychogenic problem with writing which, though rare, you may encounter, is writer's cramp, a psychosomatic impairment of the writing arm and hand characterized by any of a variety of symptoms such as spasms, incoordination, fatigue, weakness, stiffness, tremor, jerking or pain when trying to write (1:841). Attempts to compensate for the pain cause sufferers to assume bizarre writing postures, faulty habits which further inhibit their writing and cause their skills to deteriorate (1:855). People with writer's cramp, while without evidence of neurotic symptoms, are described as "particularly tense, striving, sensitive, conscientious, precise, emotionally overcontrolled people with a need to help others and a tendency to become overdependent in their interpersonal relationships and work." (1:855) Orthopaedic surgeons have responded to writer's cramp with surgery as well as manipulative and chemical therapy; neurologists have used drugs; psychoanalytic therapy has not proved helpful; psychologists, after trying general physical exercises and electroshock, have had the greatest success with specific retraining and relaxation.

Diagnosis of writing apprehension

Anxiety, especially among inexperienced writers, is sometimes caused by ignorance of the process of writing. Ascertain, first, whether your student

has a systematic method for producing a paper, and if he doesn't, teach him the stages of the writing process: how to choose a topic and narrow it, collect and organize information, produce and revise a rough draft, and so on.

A writer who is ambivalent about the ideas he is trying to present, who has not developed or organized them, who has not reached clarity about what he believes, may block. Dialogue, as either the student's or the devil's advocate, to help him sort out his ideas. Ask him to write a one-paragraph statement of thesis.

Writing apprehension can inhibit even writers who are knowledgeable of the writing process and experienced with manipulating ideas. Daly and Miller's scale (7) is an important contribution to the diagnosis of apprehension. (You should develop local norms, although you can use the statistics reported in several articles by these authors.) You may also observe some of the stylistic manifestations described above and question your student about the extent to which anxiety is interfering with his writing.

Diagnose more precisely the point in the process affected by anxiety. Your student may be procrastinating. He may research assiduously but be unable to organize the diversity of material. Given ideas and organization, he may freeze before the blank page. Through misguided perfectionism, he may start but never finish papers. The student may give up at the editing stage, unwilling or unable to proof his own writing. The whole process may be so difficult that it takes an inordinate amount of time and painful effort.

Treatment of writing apprehension

For students who are blocking, free writing (18) is a valuable tool. Have him write about whatever comes into his head without stopping for a given period of time, beginning with one minute, progressing to five and then fifteen minutes. The student should never stop writing and you should not read what he writes unless it is volunteered.

Passman (16) reports success through contracting with a young woman who had no apparent clinical problems except a history of procrastination on papers which caused feelings of panic, failure and defeatism which blocked her writing. She agreed to write one paragraph per day in one sitting and then reward herself by playing music or visiting someone. Although the client's panic at first prevented her respecting even such a simple contract, she was eventually able to write two paragraphs per day in two sittings, complete her assignments and free herself of symptoms.

A student through traumatic history or ignorance of procedures may voice a negative self-image or unrealistic expectations. Help him to become aware of his negative self-talk (13, 14, 17); then teach how to stop it and direct him to activities which will help him complete the paper.

If the level of anxiety is high, even though the student knows how to write a paper, you may need to retrain him in time management, organiza-

tion of ideas, and so on. Breaking down the task into concrete and discrete steps can be valuable for someone who is very anxious.

A student may need to learn how to relax physically. You might have him listen to a tape of relaxation instructions to calm down prior to writing. A successful treatment of writer's cramp (1:844-845) consisted of relaxation training with special emphasis on the arm and hand and retraining in writing, beginning with soft-nosed felt pens which required a soft touch on the paper and progressing to normal tools.

Systematic desensitization (2, 13) is a viable response in extreme cases. Here you would want to explore carefully with the student the situations, ideas, fears and expectations which trigger his anxiety and set up a hierarchy based on them.

According to the situation, you may try some variation of several of these methods. However, anxiety about writing may be symptomatic of deeper and more general psychological problems. In the process of diagnosis, determine whether other areas of the person's life — relationships with others, self-concept, other aspects of performance at work or school — are relatively happy and functioning effectively. If not, refer to a therapist instead of, or contingent with, work on writing. To address the specific concern without exploring deeper problems is probably, at best, patchwork.

REFERENCES

1. Crisp, A. and Moldofsky, H. A psychosomatic study of writer's cramp. *British Journal of Psychiatry*, 1965, 111, 841-858.
2. Curtis, J. Test anxiety reduction programs and prognostications for college reading labs. *Proceedings of the Seventh Annual Conference of the Western College Reading Association*, 1974, 7, 57-62.
3. Daly, J. The effects of writing apprehension on writing performance, *Journalism Quarterly*, 1977 (in press).
4. Daly, J. Writing apprehension and writing competency. Paper presented to the South West Educational Research Association, Austin, Texas, 1978.
5. Daly, J. Writing apprehension in the classroom. Paper presented to the International Communication Association, Chicago, 1978.
6. Daly, J. and Miller, M. Apprehension of writing as a predictor of message intensity, *Journal of Psychology*, 1975, 9, 175-177.
7. Daly, J. and Miller, M. The empircal development of an instrument to measure writing apprehension, *Research in the Teaching of English*, 1975, 9, 242-249.
8. Daly, J. and Miller, M. Further studies in writing apprehension: SAT scores, success expectations, willingness to take advanced courses and sex differences, *Research in the Teaching of English*, 1975, 9, 249-253.
9. Daly, J. and Shamo, W. Writing apprehension and occupational choice, *Journal of Occupational Psychology*, 1976, 49, 55-56.

10. Daly, J. and Shamo, W. Academic decisions as a function of writing apprehension, *Research in the Teaching of English*, 1977 (in press).
11. Eulert, D. The relationship of personality factors to learning in classroom composition, *College Composition and Communication*, 1967, 18, 62-66.
12. Federn, P. The neurotic style, *Psychiatric Quarterly*, 1957, 31, 681-689. Translated by W. Federn. Originally published in the *Transactions of the first international convention for applied psychopathology and psychology (Abhandlungen aus der neurologie, psychiatrie, psychologie und ihren grenzgebieten)*, Vienna, June 5-7, 1930, 61, 194-201.
13. Gourdine, E. Training paraprofessionals to deliver test anxiety desensitization. *Proceedings of the Ninth Annual Conference of the Western College Reading Association*, 1976, 9, 77-81.
14. Matthews, J. The teachers teaches thinking skills: dx and rx. Paper presented to the Eleventh Annual Conference of the Western College Reading Association, Long Beach, 1978.
15. Meichenbaum, D. Cognitive modification of test anxious college students, *Journal of Consulting and Clinical Psychology*, 1972, 39, 370-380.
16. Myklebust, H. and Johnson, D. *Learning disabilities: educational principles and practices*. New York: Grune and Stratton, 1967.
17. Passman, R. A procedure for eliminating writer's block in a college student, *Journal of Behavior Therapy and Experimental Psychiatry*, 1976, 7, 297-298.
18. Pfeffer, C. Modifying inner speech: A cognitive behavior modification technique for learning disabled students. *Proceedings of the Ninth Annual Conference of the Western College Reading Association*, 1976, 9, 142-147.
19. Southwell, M. Free writing in composition classes, *College English*, 1977, 38, 676-681.

THE IMPLICATIONS OF PIAGET'S THEORY OF FORMAL OPERATIONS IN COLLEGE READING PROGRAMS

Norma Inabinette and Pam Conlon
California State University, Fullerton

As the child approaches adolescence, he moves from the concrete operational stage to the stage that Piaget calls "formal operations." Although the development of "formal thought" varies from one individual to another, the stages of development are successive. As the child moves from the concrete to the formal stage, he approaches what Piaget considers the essence of intellectual growth and development, that is the ability to apply logic and reasoning to abstract problems and propositions. Whereas the concrete operational child can only classify, count and order objects, the adolescent begins to: 1) reason deductively, formulate hypotheses, think with several variables in mind simultaneously and 2) reflect about, evaluate and criticize the quality of his own thinking. Formal thought requires a working vocabulary of mediating terms to make possible the juxtaposition and combination of different relatable abstractions into meaningful propositions. In addition, it requires a sufficient body of stable, abstract ideas or higher order concepts on which to build.

The intellectual processes of the person who has reached the formal operational stage are marked by his capacity to reason in terms of verbally stated hypotheses (17). The person no longer requires concrete objects and their manipulation in order to reason. To do this the individual functions with hypotheses, subordinating the "real" to the realm of the "possible." The individual takes note of the obvious factors involved in the problem but goes beyond these salient cues to consider all of the physical and psychological/subjective possibilities (2) that might contribute to a solution. Typically, after minimal experimentation with a task, the formal thinker will list all possible hypotheses to explain some phenomenon and then test them one by one. Furthermore, an individual capable of hypothetical reasoning is interested in problems beyond his immediate field of experience. He can adopt an adversary point of view. Predominant structures of the formal thinker

include combinatorial systems and propositional logic involving negation and reciprocities.

The second characteristic that marks the individual who has reached the formal operational stage is the ability to engage in reflective thought. Some confusion exists over Piaget's definition of the concept, especially its relationship to processes of the self in adolescent personality development. In terms of formal operations, it has been interpreted to mean that the individual can do "second degree operations," i.e., he can build on and integrate lower level thought processes (2). The individual questions, evaluates and criticizes his own thought because he can now reverse the thought pattern, attempt to establish causal factors and relate these new thoughts to previous learnings or previous thoughts. He can think about thinking.

Because each stage of cognitive development is built upon the previous stage, the speed at which individuals move from one stage to the next varies greatly and seems to differ from culture to culture and indeed some adults never reach a full formal operational stage (17).

Implications for curriculum

There is evidence that although an individual has a predominant set of cognitive structures, he also has others he uses to a lesser degree.

The existence of hierarchical structure for critical reading skills is still, at best, hypothetical. Even if such a hierarchy did clearly exist, the impracticality of determining each student's current level of functioning in order to individualize curriculum would be difficult. A possible solution to the problem might be to provide situations which can be experienced and solved at more than one level of thought so that all students can participate at the appropriate level. (21)

In terms of the reading curriculum, the instructor must lead students from unorganized focusing (centration) on elements in isolation to a comprehensive analysis of all relevant relationships. According to Raven and Salzer (18), faced with unfamiliar information students apply processes in the following sequence: (1) Classification and seriation; (2) correlation; (3) logical multiplications; (4) tautologies or seeing all possibilities simultaneously; (5) implications; and (6) proportional and ratio thinking. Ideally, then, reading materials designed to promote critical and creative reading and problem solving might contain content allowing responses in terms of as many of these operations at one time as possible. Each student would then set his own level of interaction with the material. Finally, since there is also evidence that sufficient practice with lower level operations is a necessary basis for cognitive growth, materials requiring more limited operations are also in order.

General suggestions for curriculum

1. The speed with which one utilizes formal operational skills is related to the quality and frequency of intellectual stimulation. Reading classes

must supply both the frequency and quality of interaction so that students are carefully guided through their development. Reading classes appear to be appropriate places for such instruction since reading and thinking skills are so closely interrelated.

2. Since a strong social environment is needed for maturation of intellectual skills, instructors must provide group experiences that will facilitate learning.
3. Materials and activities need to be structured and sequenced within the curriculum to follow Piaget's stages of development: sensory-motor; preoperational; concrete; and formal. Movement through these stages is sequential and regular.
4. Classes should provide a wide variety of materials in varying disciplines since students may have reached the formal operational stage in their chosen area while being operationally concrete in other areas.
5. Classes must be conducive to formal thought with the instructor modeling formal operational behaviors and accepting of those behaviors from students — eg. using open-ended questions, encouraging unusual solutions to problems, initiating personal goal setting and self-directed objectives, etc.

Specific activities for the curriculum

1. *Analogies*, both vocabulary and content analogies, develop reasoning skill in students. Seeing relationships between words and characters or events is a low level formal operational skill, but a necessary one if further growth is to take place.

$$\frac{\text{Facetious}}{\text{Whimsical}} \quad \text{as} \quad \frac{\text{Credulous}}{?}$$

2. Solving *riddles* promotes versatile thinking while encouraging the development of multiple meaning of words.

   The more you take out of it the bigger it grows.

3. *Vocabulary Development Activities*

   a. Design a series of multiple choice questions using unusual vocabulary words. Have students guess at the answers first, then use the dictionary to verify their answers.

      What would you do with an endocarp of a peach?
      1. eat it 2. plant it 3. peel it off.

   b. Using a familiar word, add an extra letter to words to make a new word. This activity promotes the need to utilize all possible combinations.

      Early y ___

c. Provide a first and last word asking students to change a word one letter at a time until all the letters in the original word have been changed.

belt
___
___
___
rang

d. Present pairs of words sharing the same denotation although varying in meaning. Have students supply the "middleman."

Dance (ball) Sphere

4. *Coding Activities*
Supply a series of statement types such as attributive statements, extreme statements, analogies, if-then's, either-or's, value statements, generalizations, etc. Assign a code letter to each statement type and have students code each sentence in their own writing assignments, or in articles.

5. *Code breaking activities* provide students the opportunity to form relationships that are not surface-wise obvious. A series of "words" written in coded form requires manipulating between the symbols and the letters that they represent.

Δ @
☆ ! # ' ! !

6. Use of *syllogisms* or deductive schemes of a formal argument encourages student to closely examine the relationships of major and minor premises.

Every virtue is laudable, patience is a virtue, therefore,
patience is laudable.

7. Play *Liar's Club* with one student presenting information gathered in his research on a topic while two other students present plausible alternative explanations with no true accuracy. The class is then asked to reason out the accurate explanation and defend their choice.

8. *News Media Activities*

a. Employ catastrophic news events by having students consider all elements involved and the role each may have played.

The Panama Canal decision: The social, political, fiscal, geographical, military implications of it on America.

b. Choose a timely editorial having students predict who authored it with justification for their decision.

"I am an illiterate college graduate." Determine sex, age, socio-economic status, etc.

c. Select an isolated news incident encouraging students to discuss the effects of the seemingly unrelated event to the lives of people in another portion of the world.

An attack on Israel. How does it affect the life of a small Nebraska farmer?

d. Use political cartoons to have students study and interpret the possible meanings. Examination of the possible changes in meaning that could result from minor cartoon changes adds yet another dimension to the flexible thinking.

Change the character, place, etc. and decide who the cartoon could be representing.

e. Using commercial ads can encourage students to determine how specific sales tactics are designed to influence the buyer and what are the underlying social, political, emotional, cultural implications of that approach.

f. Using a taped talk show, discuss viewpoints of various individuals on the panels with emphasis on factors which may have influenced their opinions such as their geographical location, political affiliations.

9. *Literary Materials*

a. Use common proverbs for discussing the multiple meanings of words/phrases.

b. Explore metaphors and similies encouraging students to read, write and interpret common objects or conditions in new ways.

c. Utilize mini-mysteries to have students predict "Who done it" and/or the relationship between characters, plot segments, and specific factors. Justification for their choices leads to many hypothetical deductions.

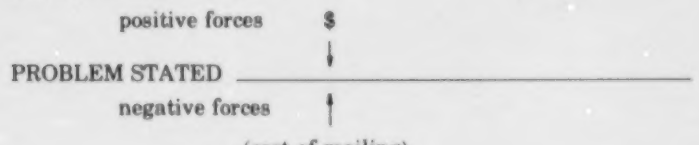
d. Having students write characterizations for a new novel encourages them to think in terms of the complexity of human behavior.

e. Give students a character description asking them to predict how that character would behave in given situations.

10. *Synthetic Thought*

a. Use brain storming techniques with the class to solve major problems encountered in reading. Encouragement of extreme and unusual solutions promotes formal thinking skills.

b. Utilization of force field analysis techniques, in which students list positive and negative forces in a given situation, enables them to explore ways and means of demolishing the negative forces by turning them into advantages.



c. Present debatable topics from their reading. Ask students to defend an opposing view or present arguments followed by counter arguments.

REFERENCES

1. Ausubel, D. The transition from concrete to abstract cognitive functioning: theoretical issues and implications for education, *Journal of Research in Science Teaching*, 1961, 2, 261-266.
2. Blasi, A., & Hoeffel, E.C. Adolescence and formal operations. *Human Development*, 1974, 17, 344-363.
3. Brekke, B.W., Williams, J.D., & Harlow, S. Conservation and reading readiness. *Journal of Genetic Psychology*, 1973, 123, 133-138.
4. Brekke, B.W., & Williams, J.D. Conservation as a prediction of reading achievement. *Perceptual and Motor Skills*, 1975, 40, 95-98.
5. Elkind, D. Quantity conceptions in college students. *Journal of Social Psychology*, 1962, 57, 459-465.
6. Feldman, D., & Salomon, G. A map understanding test (revised 1973) Eliot-Pearson Dept. of Child Study, Tufts University, Medford, Mass.
7. Inhelder, B., & Piaget, J. *The growth of logical thinking from childhood to adolescence*. New York: Basic Books, 1958.
8. Kuhn, D., & Angelei, J. An experimental study of the development of formal operational thought. *Child Development*, 1976, 47, 697-706.
9. Kuhn, D., & Brannock, J. Development of the isolation of variable scheme in experimental and "natural experiment" contexts. *Developmental Psychology*, 1977, 13, 9-14.
10. Kuhn, D., Langer, J., Kohlberg, L., & Haar, N. The development of formal-operational thought: its relation to moral judgment. Unpublished report, Cambridge, 1971.
11. Leskow, S., & Smock, C.D. Developmental changes in problem-solving strategies: permutation. *Developmental Psychology*, 1970, 2, 412-422.
12. Langeot, F. Analyse statistique de trois tests genetiques collectifs. *Bulletin De L'Institut National D'Etude Du Travail Et D'Orientation Professionelle* (BINOP), 1964, 22, 306-319.

13. McKinnon, J., & Renner, J. Are colleges concerned with intellectual development? *American Journal of Physics*, 1971, 39, 1047-1052.
14. Neimark, E. Toward the disembedding of formal operation from confounding with cognitive style. Paper read at seventh annual meeting of Piaget Society, Philadelphia, Penn., May 1977.
15. Piaget, J. *Play, the moral judgment of the child*. New York: Harcourt, Brace, 1932. Republished Free Press, 1948.
16. Piaget, J. Development and learning. *Journal of Research in Science Teaching*, 1964, 2, 176-186.
17. Piaget, J. Intellectual evolution from adolescence to adulthood, *Human Development*, 1972, 15, 1-12.
18. Raven, R., & Salzer, R. Piaget and reading instruction. *Reading Teacher*, 1971, 24, 630-639.
19. Scardamalia, M. Information processing capacity and the problem of horizontal decalage: A demonstration using combinatorial reasoning tasks. *Child Development*, 1977, 48, 28-37.
20. Sheehan, D.J. *The Effectiveness of Concepts and Formal Instructional Procedures with Concrete and Formal Operational Students*. Doctoral Dissertation, State University of New York at Albany, 1970.
21. Strauss, S. Learning theories of Gagne and Piaget: implications for curriculum development. *Teachers College Record*, 1972, 74, 81-102.
22. Sullivan, E.V. *Piaget and the School Curriculum*. The Ontario Institute for Studies in Education, Bulletin No. 2, 1967.
23. Tomlinson-Keasey, C. Formal operation in females from 11 to 54 years of age. *Developmental Psychology*, 1972, 6, 364.

THE TEACHER TEACHES THINKING SKILLS: DX AND RX FOR STUDENTS' SELF TALK

Joan M. Matthews
The University of Texas at Austin

Traditionally, educators have focused attention on content areas. This was the first frontier: how could the knowledge that one person had be transmitted to another. As educators who specialize in learning effectiveness, we push at the borders of those frontiers. In contrast to our content-area colleagues, we are more prone to concentrate on general learning strategies to help a person deal with learning tasks across a wide spectrum of subjects. Our tools are familiar — SQ3R, listening and notetaking techniques and all the other study skills so integral to what we do. But I believe it is time to push at the frontiers once again. Beyond the confines of learning principles and models and strategies lie the intimacy of the covert thinking processes of the learner. If we intervene at this level, as many are now interested in doing, then we can provide long term coping skills that a student can use with any learning strategy, and the probability is increased that the learner can use his strategies with the greatest possible effectiveness.

Old assumptions and a new model

There has been an implicit assumption by many educators that cognitive or learning strategies and internal thought processes were the same. If one were using a particular problem solving method to address a certain task, one must be "thinking" the method in order to do the task. Learning specialists' contributed techniques based on learning and memory principles to make this process more efficient. This process can be visualized by referring to Figure I below where the learning specialists' technique — oriented contributions — are seen against a larger field of cognitive strategies.

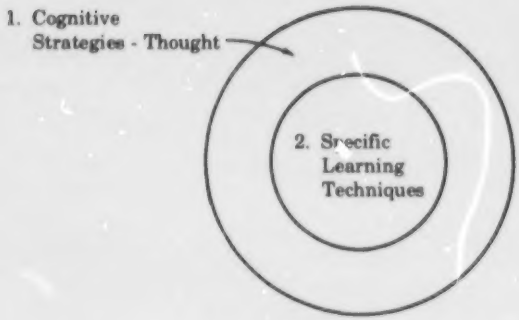


Figure 1

To re-cast this differently, it is important to recognize that all internal thought that occurs during work/learning and the strategy used to accomplish that learning are not necessarily the same process. While thinking subsumes a particular cognitive strategy, it is also more broad and includes other processes. One of these is a general coping strategy called *self-talk* — those internal messages a person gives himself as he works. If such messages, or thoughts, are relevant to the task, they may turn into an appropriate learning strategy. If they are not, however, they may impede or stop the progress of the learner and an appropriate learning strategy can be applied only with great difficulty, if at all. Self talk is seen as a predecessor to cognitive strategies which in turn precede the application of specific techniques. (Figure 2)

Figure 2

This implies a new goal for learning specialists; rather than remaining focused on the tertiary level of specific learning techniques, a broader intervention can be made at the level of internal thought processes. As educators, we need to know how to gain access to students' self talk, how to diagnose learning problems from it, and then, how to intervene.

How negative self talk interferes

First, it is important to know when and how negative self talk can be a disadvantage to the learner. Inefficient learning usually occurs when thoughts become negatively self-evaluative: when the thinker disparages himself, compares his own performance negatively to others, catastrophizes, displaces anger or fear onto the teacher or the work assignment. Frequently, people with poor self talk concentrate on unpleasant somatic sensations. Poor self talk "sounds" like these examples:

> I'm so stupid! I should know how to do this problem; it's based on simple algebra. What's the *matter* with me? (self disparagement)

> Oh Lord! He's turning in his test and I'm only halfway through mine! I'll never make it, I just know I won't! (comparing one's own performance negatively with another)

> There — I know I've missed another question. That must make five I've missed. I'll fail this test and then fail the course. I'll *never* get into law school! (catastrophizing)

> This stupid assignment! If this prof weren't so dull I could concentrate and do much better. This stuff is a total waste. (displaced anger)

> Oh dear, I'm sweating and feeling sick to my stomach. If he calls on me in French, I'll *never* be able to respond. Oh, my stomach feels awful! (somatic complaints)

In every case, attention (self talk) is directed *away* from the task and towards something else — usually the thinker. In other words, thinking is no longer task-relevant.

How does this interfere in learning? In most cases, the thinker is rehearsing past failures or he's reinforcing himself in the moment for an imagined failure — and thereby increases the probability that he will do so. Still another indicator that this type of thinking is destructive is that it frequently either triggers or maintains an unproductive level of anxiety. Even when anxiety is not present, unhelpful self talk interferes by reinforcing the process of poor concentration. Thoughts become distractors keeping the student away from his task instead of guides leading him through it.

Two remedies

What is the antidote for negative self talk? In short, it is to teach the learner to re-focus his thinking on what he is doing in a helpful way. This sounds simplistic, but it must be remembered that unconstructive self talk is usually a firmly ingrained and longstanding habit, and one does not break such habits lightly. One remedy is a six-step plan: 1) bringing the habit into awareness, 2) understanding what is wrong, 3) knowing what corrections are possible, 4) instituting the new corrective behavior, 5) modifying and adapting it and 6) practice, practice, practice. If successful, a new, more adaptive set of behavior supplants the old, and a new habit is born.

When negative self talk occurs, there is also a content-to-process shift on the part of the thinker. He needs to become aware that he has shifted in his thinking from the *content* of whatever he is working on to the *processing* of his own reactions ("I feel so dumb," etc.). A second remedy is to teach a new type of content to process shift so that the learner can catch himself at what he is doing and re-focus his thinking and attention in more helpful ways. This might go something like:

> I'll never make it! I'm missing too many questions on this test! OK, calm down. This kind of stuff won't help. Let's see. I'll re-read the question and see if I can make sense of it. If not, I'll go to an easy question.

The new shift puts emotional reactions behind, or at least in perspective and *quickly* moves the thinker back to the task.

Learning students' self talk

How does one gain access to students' self talk? Several ways come to mind immediately. One-to-one testing is a prime opportunity with children. The younger the person being tested, the more likely it is that he will talk out loud as he takes the test. When I administer WISC-R's to children, I always note what they say as they work. Many usable recommendations to parents and teachers come from these.

Another way is to model both good and bad self talk while teaching a class. I do this constantly with my adult classes before in-class exercises. I begin by giving them a humorous example — usually of me engaging in unconstructive self talk on a similar exercise. They laugh and recognize themselves, too, and when I ask if any of them say things like that to themselves, the class is usually ready to share some prime examples. Next I explain how this kind of thinking gets in the way and briefly illustrate the difference between unhelpful and task-relevant self talk. As classes progress, they are asked to monitor what they say to themselves routinely. Students can be reinforced with handouts on self talk, comments written in their

individual class worksheets, and it usually does not take long to get some success stories. At this point, it is important to switch to reinforcing successes. After a given exercise, for example, I might take just a minute or two to ask students to tell me one thing they did in the exercise that worked well, or with which they were especially pleased. They are practicing the invaluable habit of recognizing and acknowledging themselves for genuine achievements done in small, discrete steps — a process which also underlies effective thinking skills.

Last, and equally important as learning what the process of constructive self talk is all about, is to ask the student to learn aloud. Encourage him to think aloud as he solves a math problem. Facilitate his doing this with gentle questions and hypotheses about what you think *might* be going on in his mind if he gets stuck or is shy. Let his corrections and additions guide you until you have a feel for what he is doing as he thinks — helping or hindering himself.

Interventions for poor self talk

Once you know what a student is thinking, what do you do about it?

Don't discount it. Negative self talk is usually already an instance of the person discounting himself. To give a further discount ("Oh George, it's silly to think that way.") is likely to generate more unhelpful self talk — and this time it won't be shared with you ("Oh Lord, I *knew* that was stupid and now I feel like a fool.")

Emphasize that self talk is a habit that needs to be retrained and that this takes time. I learned this the hard way when I told a GRE Prep. class about helpful and unhelpful self talk. After the test, one of my students returned and told me that she had caught herself engaging in poor self talk in the test, and promptly put herself down since she also knew how destructive poor self talk can be. A "double dump" situation like this can frequently be circumvented simply by telling students about it.

Teach task-relevant self talk. This is done most effectively by modeling, following up with handouts, then with verbal reinforcement in subsequent classes. For anxiety, teach short relaxation methods like deep breathing that can be practiced as soon as the person becomes aware he is thinking anxiety-producing thoughts. For poor concentration, teach Wark and Raygor's channeling methods (2) that encourage the student to separate his daydreaming from his reading or work, and gradually increase the length of time he can concentrate without distracting thoughts. For both, give skills relevant to the content being taught (learning techniques) as well as the coping skills applicable to a better learning process (appropriate self talk).

Reinforce good self talk at every opportunity until the new habits are firm and stop reinforcing poor self talk as soon as students know what it is. Teach students to reinforce their own positive self talk and not to sneakily discount themselves. "I did that really well" is a good reinforcing statement but "I did really well even though I'm usually not good at it" contains a

discount. Shape behavior. You can do this by stopping a person in mid-discount and thanking him for sharing the complimentary portion of what he has said. Later, you can teach students to do this for themselves.

Task-appropriate self-talk is a broadly based coping strategy that forms an important foundation for cognitive strategies as well as for study and learning techniques. It is a key to decelerating anxiety, accelerating concentration, and when it includes self-reinforcement for behaviors well done, it becomes a key to increasing positive self esteem. Think to yourself "I think I'll see what I can do with this" (instead of "I could never try this with my students") and push at the edges of our new frontier.

REFERENCES

1. Meichenbaum, D. Cognitive factors in behavior modification: modifying what clients say to themselves. In C. Franks and T. Wilson (Eds.) *Annual review of behavior therapy: theory and practice.* New York: Bruner/Mazel, 1973.
2. Raygor, A. and Wark, D. *Systems for study.* New York: McGraw Hill, 1970.

INNOVATIVE READING STRATEGIES FOR THE DEAF

George Natonick
San Jose City College

Recent federal and state legislation regarding education has opened the doors to post secondary education for many individuals who would have been denied this opportunity because of a mental, neurological, or physical handicap. While the enrollment of all students attending community colleges in California has declined, the enrollment of students with disabilities has increased from 17,000 in 1976-1977 to 26,000 for the academic year 1977-1978. This increase in enrollment of students with handicaps has created additional instructional challenges. The student with a severe hearing loss presents special considerations to any instructor, but especially the reading instructor. The purpose of this presentation is to explore three necessary criteria for the development of innovative strategies and techniques for the deaf student.

First, it is important for the instructor to be aware of and sensitive to the impact of a severe hearing loss on an individual. There are four important variables that drastically influence the impact of the individual's hearing loss. These variables are the onset and the nature of the loss, the acceptance of the loss by the individual and his family, and finally his educational experiences. The definition of deafness that is used throughout this paper is: the *loss of hearing with such severity that the ability to hear, even with the use of a hearing aid, is nonfunctional* (7, 8).

Deafness is an invisible and devastating handicap. It is difficult to identify an individual visually who is deaf unless he continually fails to respond to vocal communications, begins to use sign language, or starts to vocalize with obvious distortions of normal speech patterns. The severe loss of hearing isolates the individual from the predominant mode of human communication — the spoken word — and consequently it manifests itself in severe linguistic retardation. Deafness incorporates elements of the medical, audiological, linguistic, sociological and psychological factors that influence the normal processes of development. The educational impact of three of

these factors will be investigated — the psychosocial, the intellectual and the linguistic.

Psychosocial

Psychologists have conducted numerous investigations to determine how man adjusts to the major sensory deprivation of hearing. The investigators have focused on the extent of which retarded language development distorts personality development and social adjustment. The picture that has emerged from decades of evaluation is characterized by traits of rigidity, immaturity and deficient adaptability (3). A thorough examination of the behavioral patterns of these traits led many researchers to label the development of many individuals with a severe hearing loss as maladjusted.

Over the past decade there has been a shift in the focus of research. New investigations have challenged the conclusions of earlier researchers. Cronbach (4) has questioned the validity of the test instruments used with the deaf in the prior studies. Many of the adult deaf lack the verbal skills to respond appropriately to the unstructured stimuli. In addition to the language deprivation, most have grown up in the restricted atmosphere of a residential school and have not had many of the same life experiences as the average hearing person (3). Although there is not complete agreement regarding the recent conclusions of development and adjustment, Myklebust concludes "What is normal or realistic for a hearing person may not be realistic for a person who is hearing impaired." (12:158) The fact that most adult deaf can manage their daily lives and their private affairs as effectively as the normal hearing adult, strongly indicates that the deaf person may need an extended time for his development and maturation and that he does not have a maladjusted personality.

Intellectual

Early investigations into the intelligence of the deaf have produced two divergent conclusions. The first which cites the two year mental retardation that exists for the deaf (10) combined with the language deprivation associated with deafness supports the hypothesis that a clear cognitive impairment accompanies deafness (3). The second finding recognizes no basic deficiences in the cognitive capacities of the deaf, and that the subnormal results of IQ tests occur because of the experiential and linguistic deficits (5). Levine suggests that the divergent findings can be explained by demonstrating "that the type of test used was an important determinant of the type of result obtained." (10:51) The use of IQ scores and the standard achievement test scores by themselves as the sole measures of a deaf person's intellectual development and learning would indicate limited capacities. But the educators and professionals working with the deaf doubt the validity of these scores as indicators by themselves.

Recent studies have concentrated on the processes involved with cognition aided with Piaget test-tasks instead of the former IQ approach. One of the primary advantages of this method is the reliance not on verbal language responses, but on the performance tasks. Results of this intellectual analysis indicate that the functional differences between the deaf and the general population exist because of the language and experiential deprivation and not because of inherent impairment of cognitive development. Additional research remains to be done in the disclosure of the cognitive paths that the deaf subjects use to come up with their responses (5). When this is accomplished, then strategies and techniques can be developed to overcome the effects of the language and experiential deficits.

Linguistic

The most apparent and significant consequence of deafness is the deprivation of language. With the restriction of the audition and vocalization channels, the symbol system that we call language cannot spontaneously germinate and mature. A deaf individual receives impoverished data from the environment to develop the complex grammar of a language he cannot hear (16). The task of bringing language to the deaf is a gigantic one (13). The problems for the acquisition of language by the hearing impaired are "vocabulary, multiple meanings of words, verbalization of abstractions, and the complexity of the structures of our language." (3:106) There has not been much success in achieving this task. The deaf show "a three- or four-year retardation" in language performance that is "carried over to all school subjects that require adequate verbal language comprehension for their mastery." (10:53)

The deaf have not permitted their linguistic problems to lessen their communicative desire. Their main method of communication is sign language in which gestures, position of the hands and arms, body language and facial expression express words and concepts. By English standards it is a nongrammatical language that does not lend itself to straight verbatim translation. The sign language of the deaf "might best be described as a dialect of English, analogous to any dialect of sociologically or linguistically isolated groups." (5:66) It is a vivid and lively conveyor of communications. It does not require the special abilities that are required by the deaf in the learning of speech and speech reading. Although the use of signs has been discouraged and even barred from classroom instruction, it has become included in the system of instruction known as total communication.

Educational implications

These three considerations have several implications for educators and especially for learning assistance practitioners. The most prominent effect is with the linguistic and communicative skills. The deficits in these two areas

have resulted in academic underachievement for most deaf: reading skills of 18 and 19 year old deaf students with a fifth grade level; the average improvement of reading skills from the sixth grade through the tenth grade totaled only one year; basic arithmetic skills equivalent to the normal sixth or seventh grade; social studies, science and language skills are at levels of most fifth grade hearing students (3). The deaf adult has difficulty distinguishing between active and passive voices, and recalling the root word to show the different parts of speech. He has great difficulty with the use of articles. His placement of adjectives is usually after the noun (7).

For the instructor, these considerations mean additional time spent with the deaf student in developing acceptable skills in "vocabulary development, understanding the multiple meanings of words, verbalization of abstractions and mastering the complexities of our Engish language." (3:106) Since adults learn language against a very different cognitive background than do children, the instructor may be forced to develop different instructional strategies. "All one can do to assure an individual's cognitive development is to supply him with the building blocks; the capacities themselves he will have to develop by his own powers." (13:35) The instructor may find that the restricted experiential development of the deaf student will require additional time in the development of suitable materials to supplement the lack of many daily experiences often taken for granted.

Strategies and techniques

Reading deficiencies are not the sole property of the deaf person. Nor is the concern for developing appropriate and successful strategies to teach reading peculiar to the deaf. If a reading disability is a matter of concern for the hearing person, it must be labeled a catastrophe for the deaf person. Auditory substitutes for reading are readily available to the hearing person, but such possibilities are not accessible to the deaf. If reading is going to make the impact it must on the deaf, then three considerations must be met: 1) programmed instruction; 2) specifically designed materials; and 3) team approaches.

Programmed instruction

Research has shown that programmed instruction is successful with the deaf (1). Programmed instruction has three essential elements that are conducive for use with the deaf. Programmed instruction enables individualization of the material to meet the needs of the deaf student. It provides reinforcement through vision — the auditory channel for the deaf student. It provides the repetition necessary for the deaf student to master the material.

One of the successful programmed instruction projects for the deaf is Project LIFE (Language Improvement to Facilitate Education of Hearing-Impaired Children). Its development was sponsored by the Media Services and Captioned Films and is administered by the National Education Associa-

tion. Project LIFE contains filmstrips concentrating on all aspects of language development in a hierarchical approach. It includes the more important (and more difficult for the deaf) thinking skills (14). Although Project LIFE is intended to be used with children, the system can be adapted and be employed with the deaf adult. The hardware for the system is available, and all the instructor is required to do is to develop the necessary material.

Specially designed materials

The selection of reading material is an important consideration for developing effective strategies. Concessions must be made for the language handicap caused by deafness. Readability formulas take into account only unfamiliar words and not idiomatic meanings taken from simple words. It is not enough to control just the vocabulary in reading materials selected for use with students who are deaf. Hargis (6) includes the control of syntax, common idioms and figures of speech.

Specialty publishing companies are expanding their scope of materials to include the adult deaf. Interstate Press of Danville, Illinois, publishes *The Language of Life* specifically designed for use with the deaf student. Dormac Publishers, Beaverton, Oregon, produces a variety of materials to be used with the adult deaf. The materials available include extensive work with idioms, language development and syntax. Gallaudet College, the only liberal arts college for the deaf, also has materials available for use with the adult deaf.

If the instructor is innovative, he can produce his own material. But he must keep in mind the necessity of controlling the entire gamut of language development. The materials should contain as much visual reinforcement as possible. The pictures can be useful for making references. There should be a balance to encourage the further development of decoding and comprehension skills.

Team Approach

The single most important factor in the success of a reading program is the staff (15). It is the staff that is aware of the needs of the student. The staff makes the decision for coordinating the student's needs with the reading material. Since most college reading instructors have had little previous contact with the deaf, and no training in the education of the deaf, the instructor will need the assistance of specialists knowledgeable of deafness. Contact with the specialist is important to assess not only the materials, but also the reading skills of the student. The cooperation between the instructor/staff and the specialist is necessary in adapting appropriate corrective techniques and materials for other academic areas. This cooperation will not only improve the techniques, but also benefit the student.

There is no one best way of teaching reading to deaf students. The most successful programs seem to be those in which the reading staff uses a variety of appropriate techniques, designed to fit the situation with the student.

Every avenue must be explored, and if appropriate, used to increase the reading skills of the deaf student. This is a difficult challenge. If the deaf student, like his hearing counterpart, has a "right to read" the challenge must be met.

REFERENCES

1. Beckmeyer, T. Application of programmed instruction to remedial reading for the deaf, *Volta Review*. October 1963, 65, 415-17.
2. Bolton, B. (Ed.) *Handbook of measurement and evaluation in rehabilitation*. Baltimore: University Park Press, 1976.
3. Bolton, B. (Ed.) *Psychology of deafness for rehabilitation counselors*. Baltimore: University Park Press, 1976.
4. Cronbach, L.J. *Essentials of psychological testing* (3 Edition). New York: Harper and Row, 1970.
5. Frisina, R. (Ed.) *A bicentennial monograph on hearing impairment: trends in the USA*. Washington, D.C.: The Alexander Graham Bell Association for the Deaf, Inc., 1976.
6. Hargis, C. The relationship of available instructional reading materials to deficiency in reading achievement, *The American Annals of the Deaf*, January 1970, 115, 27-29.
7. Jacobs, L.M. *A deaf adult speaks out*. Washington, D.C.: Gallaudet College Press, 1974.
8. Katz, L., Mathis III, S. L., Merril, Jr. E.C. *The deaf child in the public schools*. Danville, Illinois: Printers and Publishers, Inc., 1974.
9. Kopp, H.G. (Ed). *Accent on unity: horizons on deafness*. Washington, D.C.: US Department of Health Education and Welfare, 1968.
10. Levine, E.S. *The psychology of deafness*. New York: Columbia University Press, 1960.
11. Meadow, E.D. and McCay, V. *They grow in silence*. Silver Spring, Maryland: National Association of the Deaf, 1974.
12. Myklebust, H.R. *The psychology of deafness*, Revised Edition. New York: Grune and Stratton, Inc., 1964.
13. O'Rourke, T.J., (Ed.) *Psycholinguistics and total communication: the state of the art*. Washington, D.C.: The American Annals of the Deaf, 1972.
14. Pfau, G.S. Project LIFE Pi Analysis, *Research and utilization of educational media for teaching the deaf* (Symposium), Lincoln, Nebraska, 1969, 829-37.
15. St. Aubin, R.J. *The place of reading in the education of the deaf: 1900-1970*. (A Graduate Project for the Leadership Training Program for the Deaf at C.S.U.N.), 1971.
16. Stuckless, E.R., (Ed.) *Research on behavioral aspects of deafness*. Washington, D.C.: US Department of Health Education and Welfare, 1965.

SOCRATES IN ADULT BASIC EDUCATION OR THE ART OF QUESTIONING

Horst G. Taschow
University of Regina

What would Socrates do if he were still with us? Socrates would still go around and ask questions. Socrates would pose a problem, generate a hypothesis, ask questions, listen to the answers, ask more questions in order to obtain positive results. Through logic-probing dialogues Socrates foreshadowed what two thousand three hundred years later would become educational practice — to ask questions whose purposes guide to higher reading-thinking skills.

Questions lead from the passivity of the conformist mentality of seeking out possible answers. Inquisitive questioning leads to the process of self-functioning that sets the learner free from the pseudo-educational product of reproducing textbook and teacher-told informations.

In the latter, instruction produces the narrowest of literal comprehension skills as reported by Guszak (2), Austin and Morrison (1) and Henry (3). In the former, instruction guides students from convergent to divergent thinking embedded in and permeated by genuine concepts, formal operational thought and/or symbolic representation as reported by Vygotsky (7), Piaget (5:98) and Bruner (5:149).

While numerous studies investigated what kinds of questions were asked by elementary and secondary teachers and what kinds of answers were given by their respective classroom populations, literature in Adult Basic Education (ABE) apears to be void of investigative studies reporting on what kinds of questions lead to what kinds of reading-thinking skills.

The study

Over a period of ten weeks, two hundred twenty-one adult students in ABE classes were asked to read silently ten passages increasing in length and difficulty as reported by Taschow (10) in *A Project Study of Action Research*. The ten questions were sequential, one leading into another, and

were composed of three fact, three vocabulary, and four inference questions. Thus the selection of questions represented three different cognitive tasks identified by Taba (9) as teachable aspects of thinking.

The questions asked

Fact questions asked students to recall one or two items from the text whose answers responded to what, when, where and who, single word recall *or* two word recall — but not in sequential order and half marks for one correct answer.

Vocabulary questions asked students to give meanings to a single word or a word phrase within the constraints of a sentence. *What does the word* seeking *mean in the sentence "The labor movement is seeking wage increases of up to thirty per cent?"* (one word meaning) or *What is meant by the phrase* the arbitrator must be as wary *in the sentence "The arbitrator must be as wary as passing between the Scylla and Charybdis?"* (phrase meaning).

Inference questions asked the readers to conjecture anticipatory thought, to supply a rationale, to require a choice and to render judgment. *How do you think management will act in the future when consulting with labor representatives?* (conjecturing anticipatory thought). *Explain why the driver of the convertible has received a ticket from the highway patrol?* (supplying a rationale). *Who did the better job in replacing the blade on the grader, Bob or Paul?* (requiring to make a choice). *Why would you have liked or not liked to work with the Stranger?* (rendering judgment).

Analysis and synthesis of questions and responses

The ten silent reading passages each followed by ten questions allowed a possible total of 22,100 question-response performances. Table 1 shows distribution of possible and actual responses and how they relate to the three level questions.

Table 1
DISTRIBUTION OF RESPONSES AND THEIR RELATIONSHIPS TO THE FACT-, VOCABULARY- AND INFERENCE QUESTIONS IN TOTALS, SUB-TOTALS AND PERCENTAGES

		Fact		Vocabulary		Inference	
Responses	Totals	Sub-T.	%	Sub-T.	%	Sub-T.	%
Total possible	22,100	6,630	30	6,630	30	8,840	40
Total actual	18,250	5,902	32	5,473	30	6,875	38
Total unanswered	3,850	728	19	1,157	30	1,965	51
Total correct	12,802	4,654	36	3,905	31	4,243	33
Total incorrect	5,448	1,248	23	1,568	29	2,632	48

Analysis of the 12,802 questions and their correct answers showed a distribution of the three level question-response performances as presented in Table 2.

Table 2
DISTRIBUTION OF THE 12,802 QUESTIONS AND CORRECT RESPONSES IN SUB-TOTALS AND PERCENTAGES

		Distributions		
Questions	Responses	Sub-T.	%	Sub-T.
Fact	single word recall	2,094	45	
	two word recall	2,560	55	4,654
Vocabulary	single word meaning	1,562	40	
	phrase meaning	2,343	60	3,905
Inference	anticipatory thought	1,581	37	
	rationale conclusions	758	18	
	making a choice	986	23	
	rendering judgment	918	22	4,243

To ascertain a more comprehensive perspective of question-response performances in this study, Table 3 compares distributions of sub-totals of correct answers with those of total actual and total possible answers.

Table 3
COMPARING FACT-, VOCABULARY- AND INFERENCE QUESTION-RESPONSE PERFORMANCES IN NUMBERS AND PERCENTAGES OF CORRECT SUB-TOTALS WITH ACTUAL AND POSSIBLE SUB-TOTALS

	Correct		Actual		Possible	
Question-Response	Sub-T.	%	Sub-T.	%	Sub-T.	%
Fact	4,654	36	5,902	79	6,630	70
Vocabulary	3,905	31	5,473	71	6,630	59
Inference	4,243	33	6,875	62	8,840	48

Performance outcome

Study of the preceeding Tables indicates that the strength of adult readers lies in answering fact questions in general (Table 3) and of one and two recall facts in particular (Table 2). At least in this sample, factual apprehension in the form of recall expresses itself at the lowest level of reading-thinking skills. Does this performance outcome evidence that ABE instruction emphasizes the narrowest level of literal comprehension? Are adult readers more likely to memorize, recall and then regurgitate bits of information than they are able to infer, integrate and evaluate thoughts and ideas? In the light of diminishing manual labor employment in a

technological-oriented society, can ABE instruction afford to be remiss in teaching inferential comprehension leading to divergent thinking?

Lifting reading-thinking skills

To induce adult learners to shift gears from lower level thinking to higher level thinking, inquisitive questioning is essential. Shifting gears depends upon the ABE instructor's awareness of different purposes for questions. If the purpose of a question is to define a word, then the purpose determines the kind of question to be asked. The purpose directs the covert mental process to the overt performance outcome.

Table 4 presents keywords to identify questioning purposes. Keywords and samples are adapted for ABE instruction from "Questioning Techniques" by Shipley, Cann, Hildebrand and Mitchell (6).

Table 4
KEYWORDS FOR PURPOSE QUESTIONS AND APPLICABLE SAMPLES TO LIFT COMPREHENSION LEVELS IN TEACHING READING-THINKING SKILLS

Keywords for Purpose Questions	Applicable Samples
to define	What is the meaning of the term 'sheltered workshop"?
to interpret	How does the temperature in this region affect the growth of vegetables?
to compare	How does apprentice training compare with Training-on-the-Job?
to evaluate	How did the training in life skills prepare you to cope with your present employment?
to organize	How can the increase of meat prices over one year be shown in a graph?
to solve problems	If the gasoline price goes up by five cents, how much more would it cost you to drive your car one hundred miles?
to apply informations	From what you have learned, what influences does heavy industry have on the lives of the people in this area?
to judge	On what basis should an adult be referred to additional upgrading programs?

to demonstrate difficulties	If the carburetor of this car is removed, how would you put it back?
to appreciate	How does Bill express his happiness of being employed?
to show creativity	What other usable things could be made from this piece of fabric?
to analyze critically	What is said in the expression, "In today's business world, dog eat dog?"
to develop ideas toward change	In what ways may the construction of the northern pipeline affect the lives of the Indians?

Meeting conditions to answer

While different purposes require different questions, questions as suggested by Sanders and reported by Logan and Logan (4) presuppose different conditions to be met in answering. A recall question presupposes that adult learners have studied, stored and retrieved the exact answer. Without fulfilling this presupposition the question *"What is the capital city of California?"* cannot be answered correctly from memory. A reasoning question presupposes the ability to follow directions, to reason out the steps in solving an arithmetic problem and to explain cause-effect relationship in proper sequence. Without mastering these conditions the question *"What are the events leading to the Civil War?"* cannot be answered. An evaluation question supposes beforehand the knowing of how to think critically, weigh evidence and render judgment. Without applying this specific knowing answers to the question *"What kind of work would you like to do, carpentry or plumbing?"* express uncertainty. A creative question supposes beforehand that the learners are willing to exchange convergent thinking in favor of divergent thinking. Answers to creative questions presuppose abilities to research possibilities. Without courage to seek solutions answering the question *"If you had lived during the 1849 goldrush in California, what would have been your outlook on life?"* turns into a guessing game.

Reaching out

The preceding study examined what kinds of questions were predominantly answered by adult learners in ABE instruction. Accompanying discussions illustrated by applicable samples explained why and how to lift reading-thinking skills from mere recalling of factual informations to interpreting, inferring, generalizing and applying thought and ideas. When as

stated by Taba (8:179) "acquisition of knowledge simultaneously becomes a method of inquiry and a method of thinking, ABE instructon comes closer to the Socratic method of inquisitive questioning." However, does not Socrates' difficulty to train Athenians to think bear some resemblances to that of our days?

REFERENCES

1. Austin, M.C. and Morrison, C., *The first r: the Harvard report on reading in elementary school.* New York: MacMillan, 1964.
2. Guszak, F.J., Teacher questioning and reading, *The Reading Teacher*, December 1967, 21, 227-234.
3. Henry, J., Reading for what, *Teachers College Record*, 65, 1963.
4. Logan, M.L. and Logan, V.G., *Design for creative teaching*, Toronto: McGraw-Hill, 1971, 120-122.
5. Patterson, C.H., *Foundation for a theory of instruction and educational psychology*, New York: Harper & Row, 1977.
6. Shipley, C.M. et al., *A synthesis of teaching methods*, (2nd ed.), New York: McGraw-Hill, 1968, 110-111.
7. Smith, B.E., Goodman, K.S., and Meredith, R., *Language and thinking in school*, (2nd ed.) New York: Holt, Rinehart and Winston, 1976, 145-147.
8. Taba, H., *Curriculum development. theory and practice*, New York: Harcourt Brace Jovanovich, 1962, 179.
9. Taba, H., The teaching of thinking, *Elementary English*, May 1965, 42, 534-542.
10. Taschow, H.G., *Implementation of the reading project in ABE*, a study of action research, Department of Continuing Education, Regina, Saskatchewan, 1976.

PSYCHOLINGUISTIC IMPLICATIONS REGARDING THE DEVELOPMENT OF READING RATE

Keith J. Thomas
Arizona State University

Out of a sense of awe, one is tempted to dismiss this topic by simply suggesting that those interested in the subject refer to the collective research reports and professional writings of Kenneth Goodman, his associates, and Frank Smith. The challenge of the unknown, however, compels us to come to grips with the issue even though our efforts in exploring the subject will probably be less erudite, lucid, or insightful. Building instructional methodologies solely on implications from theoretical inquiry and models of the reading process is at best speculative. Nonetheless, we shall proceed initially by highlighting, in summary fashion, the theories and research findings of Smith (8) and Goodman and his associates (1), particularly as their works relate to fluency in reading.

In developing his feature analytic model, Smith has described fluent readings as the ability "to make optimal use of all the redundancy available in a passage of text." (8:213) Smith's premise is that the overriding purpose of reading is to reduce uncertainty; according to his model, uncertainty may be reduced in three possible ways — through letter identification, word identification, and meaning identification. He has suggested, furthermore, that these aspects of uncertainty reduction may function independent of one another; they do not *have* to occur in sequence, nor *can* they be invoked simultaneously. (8:213) Hence, meaning identification, the *ultimate* reduction of uncertainty, may be achieved immediately or through various mediating stages. Reading for immediate meaning identification, by far the most efficient approach, is possible through reliance on syntactic and semantic sequential redundancy during the processing of textual material. Smith describes this processing as follows:

> "Reading for meaning" entails making use of information simultaneously at both the surface and deep structure of language — using

elements of both visual and semantic information. Because the fluent reader operates simultaneously at the surface and deep structure level — discriminating visual features and using his knowledge of grammar to associate them with the developing semantic interpretation — he is able to read with a minimum of visual information. (8:207)

It is far easier to demonstrate the outcomes of these phenomena than to attempt to explain in detail precisely how such operations are performed. For example, using Koler's (5) technique as illustrated by Smith (8:208) read the next paragraph in a normal left-to-right fashion. (You may wish to check the amount of time it takes.) When you finish reread the paragraph *backwards*, right-to-left starting with the bottom line and moving up to the top. (Check timing again.)

Text printed the (from meaning construct) process efficiently to ability one's on has system cueing syntactic/semantic sequential the that influence the demonstrates learned have you what to opposition in totally pattern attack directional a employing while (fluently more, i.e.) accuracy more with and time less in paragraph this read to ability your.

Our summary of Smith's work has been cursory; we have merely attempted to point out some salient features of his theory that we believe have potential implications concerning the development of fluency. And fluency is our real concern, for it is fluency which enables one to read with versatility — to attain what we believe to be true maturity in reading.

The psycholinguistic inquiry of Kenneth Goodman into various aspects of the reading process has yielded many significant findings. Two findings appear especially germane to the topic under discussion: 1) all readers, regardless of competency or method of instruction, appear to rely on the use of various language cues while reading, and 2) the most proficient strategy employed by readers apparently involves the simultaneous use of information available through grapho-phonic, syntactic, and semantic cueing systems (4) which, of course, are all present in textual material.

Goodman (3) does distinguish between degrees of proficiency in reading and describes this differentiation as follows:

Reading is an active process in which the reader selects the best choices possible. If he is highly proficient, he will have good speed and high comprehension; reading will be a smooth process. If he is less proficient or he is encountering unusually difficult material...reading will be less smooth and will involve considerable cycling back to gather more cues and make better choices.

Meaning is the constant goal of the proficient reader and he

> continually tests his choices against the developing meaning by asking himself if what he is reading makes sense. The process does not require that he perceive and identify every cue. In fact that would be both unnecessary and inefficient. But it does require that the reader monitor his choices so he can recognize his errors and gather more cues when needed. (3:483)

This description is based on Goodman's model (3:491) which represents the proficient reader at work, and the competence in reading which Goodman suggests is the goal of reading pedagogy. (3:483)

Based on the assumptions underlying Goodman's model, studies of readers' processing behaviors have indicated that textual deviations observed during oral reading should not be classified as mistakes or errors. According to Goodman, such deviations are more accurately referred to as miscues since the deviations are traceable to errant predictions generated from the various cueing systems. Likewise, analyses of these miscues occasionally indicate that the reader is not necessarily misreading or even miscueing the text, but rather is actually "reading" deep structure (meaning) as opposed to surface structure. The following example is a classic illustration:

went woods
The boys ~~ran~~ through the dark ~~forest~~.

The occurrence of these types of miscues, semantically and syntactically approximate to the intended meaning, certainly lends credence to Smith's contention that immediate identification is possible. Otherwise, there is no way to logically explain such substitutions on the part of the reader.

Despite the risk associated with making heuristic leaps from theory to practice, we will now suggest how these synopses may be translated into statements about and implications concerning the development of fluency (which we choose to equate with the term "reading rate").

Actually, assuming an understanding and acceptance of his model, Smith's comments regarding the classroom teacher's function are more easily translated into practical suggestions than one might believe. For example, Smith contends that immediate meaning identification is acquired as a result of experience or practice (8:209). In developing fluency, the implication is that learners need many experiences with actual reading. In other words, readers attain fluency through reading, not through learning *how* to read. Furthermore, in order to neutralize the possible felt need for letter or word identification, it would appear that practice material of high interest, and appropriate vocabulary load and syntactic sophistication should be provided in quantity. It is imperative, in other words, that the reader have control over the vocabulary and grammatical structures of the textual material. In addition, some familiarity with the content or topic of the various materials would tend to provide a foundation or background of experience enabling the reader

more freedom to predict surface structure from deep structure (meaning).

Smith also suggests that readers must "discover" for themselves those features which reduce uncertainty (8:225); the teacher can assist by providing information, corrective feedback, and encouragement (8:209). With respect to these comments, we actually find more practical implications emanating from Goodman's work. We propose, for example, that the teacher might structure the learning environment so as to maximize the opportunity for the reader to become *aware* of how sequential syntactic and semantic redundancy cues can and do operate. One instructional aid which may serve as a means to this end is use of various modified applications of the CLOZE technique applied to textual materials. Goodman and Burke (4) and Thomas (7) have illustrated a variety of such techniques.

Another approach we believe to be consistent with the outcomes of psycholinguistic research is assisting the reader in recognizing organizational patterns among various types of writing. Experience with the structural features which develop relationships between and among ideas in expository or narrative material is critical to semantic control. Directing the reader at what to look for (i.e. various word and structure cues to organizational patterns) and, therefore, how to and what to predict semantically should assist in developing the significant anticipatory sampling behavior needed for meaning identification. Vacca (9) has suggested some possible structured learning experiences as well as detailing a corpus of highly useful "signals" to such developmental patterns as cause/effect, comparison/contrast, and time ordering. Thomas (6,7) has also illustrated how these organizational cues might be taught through closure type reading exercise.

In retrospect, the first of our suggestions (massive doses of actual reading with appropriate material) was directed at assisting the reader in developing immediate meaning identification. Our second and third recommendations would, by definition, have to be considered as attempts to direct the reader toward mediated meaning identification. We do not believe these latter two to be counter-productive to the overall goal of developing fluency. Rather, it has been our experience that many readers lack the ability to go directly from print to meaning because they lack what Smith refers to as the bridge from surface structure to deep structure (8:221).

The suggested activities are designed to help build that bridge. Therefore they do indeed develop mediated processes, but *they* should be viewed as mediating experiences. That is, they are means to an end, not ends in themselves. Once the bridge has been built the reader should be allowed to cross it without interruption. The bridge may need bracing from time-to-time, but it probably will not need rebuilding.

REFERENCES

1. Allen, P.D., and Watson, D.J. (Eds.), *Findings of research in miscue analysis: classroom implications*. Urbana, Illinois: ERIC, 1976.
2. Goodman, K.S. The reading process: theory and practice. In Hodges and Rudorf (Eds.) *Language and learning to read*. New York: Houghton-Mifflin Co., 1972, 143-159.
3. Goodman, K.S. Behind the eye: what happens in reading. In Singer and Ruddell (Ed.) *Theoretical processes of reading*. Newark, Delaware: International Reading Association, 1976, 470-496.
4. Goodman, Y. and Burke, C. *Reading miscue inventory: manual*. New York: Macmillan Co., 1972.
5. Kolers, P.A. Reading is only incidentally visual. In Goodman and Fleming (Eds.) *Psycholinguistics and the teaching of reading*. Newark, Delaware: International Reading Association, 1969.
6. Thomas, K.J. Instructional applications of the CLOZE technique. *Reading World* (in press), 1978.
7. Thomas, K.J. Modified CLOZE: the INTRAlocking study guide. Unpublished manuscript, 1978.
8. Smith, F. *Understanding reading*. New York: Holt, Rinehart and Winston, Inc., 1971.
9. Vacca, R. A means of building comprehension of social studies content. In Herber and Baron (Eds.) *Research in reading and content areas: second year report*. Syracuse: Syracuse University Press, 1973, 75-82.

ABSTRACT

A MASTERY LEARNING APPROACH TO COLLEGE READING AND STUDY SKILLS

Gerard Giordano and Sharon Wooden*
New Mexico State University

Mastery learning assumes that academic performance is not necessarily distributed as a normal curve. Academic performance is extremely maleable. Benjamin Bloom adduced evidence that a primary reason for normally distributed performance is the lack of appropriate cognitive entry skills for learning tasks. If these cognitive entry skills are developed, performance about the mean becomes much more robust. Using the Bloom model, a mastery learning set of units was developed to teach reading and study skills to college freshmen. These reading and study skills are the cognitive entry skills which largely determine success in college course work. As the precondition for such units, a self-paced criterion referenced reading and study skills test was assembled. The test measures performance on seven competencies: (1)scheduling and study skills, (2) note-taking, (3) mnemonics, (4) functional reading, (5) critical reading, (6) book reports, and (7) library resources and research paper. The test and its relation to the mastery learning model is described.

*Gerard Giordano, *Box 3AC, New Mexico State University, Las Cruces, N.M. 88003*

ABSTRACT

THE JOB: TO GET MENTAL WHEELS TO ROLL

Leon E. Williamson*
New Mexico State University

The major cause for the need for learning assistance counselors on college campuses is the decline in cognitive and literacy skills prerequisite to scholastic success in college. Learning assistance counselors have discovered that the superficial remedies of speed reading, SQ3R, memorizing vocabulary in isolation, shallow exercises in outlining and notetaking are inadequate. These students need a learning assistance counselor who has a greater depth and breadth of knowledge than does the traditional college instructor. The learning assistance counselor finds the slick trade materials on how to study at best only supplementary to his expertise. His interests and concerns propel him deeper and deeper into the study of concept development, semantics and the cognitive structure of knowledge. He finds introductory textbooks interesting reading and analyzes four or five for each discipline in order to compile their common vocabulary and concepts as well as to sensitize himself to the relationships the abstract and concrete concepts have for each discipline. He slowly and methodically acquires the knowledge necessary to direct students to create those "wheels" which are necessary to roll in a person's mind before he can learn. Above all, the learning assistance counselor does not confuse his role or job description with that of the traditional counselor. He recognizes his role as that of facilitating learning and not resolving emotional and/or social problems. The learning assistance counselor finds that students learn much more readily with greater improvement in performance when they study vocabulary, conceptual relationships, outlining and notetaking directly from their college textbooks. When students do work directly from their textbooks, the learning assistance counselor gets the mental "wheels" to roll much quicker on a permanent basis.

*Leon E. Williamson, *College of Education, New Mexico State University, Box 3AC, Las Cruces, New Mexico 88003*

USING A STUDENT PORTFOLIO TO PERSONALIZE A COURSE IN ACADEMIC READING

Ann Peterson Coil
California State University, Fullerton

For decades educators have been calling for broadly based goals of education that include intellectual, social, emotional and moral maturity (1, 3, 4). Sanford, in *Where Colleges Fail*, states, "The time has come for us to control our zeal for imparting knowledge and to concentrate our efforts on developing the individual student." (10) Peterson, (9) in a study of 116 California public and private colleges and universities found that students, faculty, administrators, and community residents felt more emphasis should be given to intellectual orientation and personal development. The specific aspects of intellectual orientation that Peterson identified were developing 1) problem-solving abilities, 2) independence in learning, 3) life-long commitment to learning and 4) the desire and ability to synthesize knowledge from a variety of sources. Aspects of personal development included helping students 1) identify and meet goals, 2) develop a sense of self-worth and 3) develop deeper levels of self-understanding.

Given the above concerns and the profiles of the "new" students as delineated by Cross and Kerstiens (2, 8), Cross (2) calls not only for broadly based goals of education, but for new, innovative, and flexible instructional approaches which will account for individual differences and provide for the culturally, linguistically, and educationally diverse students now entering institutions of higher learning. The use of a student portfolio is one flexible, innovative instructional technique that provides for individual differences and can help students develop those aspects of intellectual and personal development identified by Peterson.

The student portfolio was developed as part of the Reading and Thinking Skills Project awarded to the Undergraduate Reading Program at California State University, Fullerton and funded by an innovative grant from California State University and College Chancellor's Office. It was first used in the CSUF course READ 201, Academic Reading: Analysis and Strategies. The

term "portfolio," as suggested in the grant guidelines, was maintained because it connoted a more personal record and description of an individual, much like an artist's portfolio of his unique and creative work. The 201 Course required the portfolio to be a looseleaf notebook in which all evaluation and instructional activities and materials were to be recorded and collected. Although in the first semester the organizational format was determined by the instructor, students in the second semester were given the responsibility of determining the organizational format and writing a table of contents and a rationale to support their format. The course objective and activities were to serve as guidelines. Approximately one-quarter of the course grade was based on the student portfolio. Portfolios were graded according to four criteria: 1) organization, 2) professional/academic appearance, 3) thoroughness and quality of work collected in the portfolio, and 4) extended application (to be explained later).

The portfolio was originally implemented into the course as a resource tool for the student in which all course activities were collected and as an evaluation tool for the instructor. It quickly became evident that the portfolio also had great potential for fostering personal and intellectual development.

Personal development

Evaluation activities

Two aspects of personal growth identified by Peterson and reflected in the student portfolio are the development of deeper levels of self-understanding and the ability to identify and meet goals. To help students gain a greater understanding of their strengths and their limitations, the portfolio included an evaluation section in which the student recorded all results of skill and attitudinal assessments on a Summary Evaluation and Goal Sheet. To help students develop the ability to identify and meet goal-setting skills, students evaluated and prioritized problem areas identified through assessment, established specific goals, and determined strategies to accomplish the goals. Instructor conferences and peer group sessions assisted students determine goals and strategies that were realistic and appropriate. This evaluation section became the core of the portfolio because it provided an on-going record of the student's progress throughout the semester and, as such, served as an evaluation tool for both student and instructor.

Journal-related activities

The journal-related activities in the portfolio fostered deeper levels of self-awareness by helping students identify and clarify their values, attitudes, goals, and motivation. As a weekly record of the students thoughts on their academic, professional, and personal lives, the journal reflected changes and growth in attitudes and behavior. Activities from *Values Clarification* by Simon, et al (11), such as the Pie of Life and "I Learned that I," allowed students to analyze values and react in specific ways to various events or activities.

Intellectual orientation

Problem-Solving

Peterson identified the development of problem-solving abilities as one aspect of intellectual orientation that should receive more emphasis in institutions of higher education. The problem-solving process was brought to a conscious level and applied in a practical and meaningful way in the portfolio through the use of the summary evaluation and goal sheet, mentioned previously. The goal sheet took the students through the problem solving process step by step as they evaluated skills and attitudes, set goals and determined strategies. This form enabled students 1) to survey the nature and scope of the problem by recording and summarizing all assessment data; 2) to identify and define the problem by isolating areas of limitation, establishing goals based on these areas, and prioritizing the goals; and 3) to analyze various strategies for solving the problem by determining which activities methods introduced in class were most appropriate for accomplishing the established goals. Throughout the semester the students worked to accomplish these goals, and at the end of the semester included in their portfolio an evaluation of the specific goals and the degree to which they accomplished them.

Application and integration tool

The synthesis of knowledge that Peterson identified as a factor in intellectual orientation is a vital higher level thinking skill. The portfolio was not, like most class notebooks, just a receptacle of facts and theories. Each theory or technique was accompanied by assignments that were an integral part of the portfolio design and which forced the students to apply the target skill and integrate it with previously learned skills.

For example, lecture notes taken in class were to follow the Cornell format and 5 R process. After each lecture, students revised and reduced notes in the recall column and related information to textbook material. The following class period, students reviewed the recall column to refresh their memories of the previous class activities and to see the continuation and continuity of the activities which were to follow for that day.

One of the grading criteria for the portfolio was extended application. In order to receive an "A" on the portfolio, students had to demonstrate that they had gone beyond the class assignments in synthesizing and applying the theories and techniques introduced in class. Extended application took two forms. One was to apply the concepts and theories to other courses and the other was to adapt and modify the concepts in new and creative ways. Many students continued to use time schedules throughout the semester, even though only one time scheduling assignment was given. Other students made daily rather than just weekly entries in the journal or "I Learned that I" form.

Organization of approach and materials

Closely related to the problem-solving abilities are organizational skills; for in order to solve a problem efficiently, one must approach the problem in an orderly and systematic way. Even a creative solution, such as that described in the synectics approach by Gordon (5) involves some systematizing of the preliminary steps.

The portfolio serves as a tool for developing organizational skills by forcing students to collect all course materials and information in one place and to organize them logically to reflect the goals of the course and to facilitate easy retrieval. This activity also develops critical thinking skills by encouraging the student to analyze, evaluate, categorize, and sequence the course topics and activities.

In addition, the portfolio can serve to help students organize important data. An Academic History Form was used in the READ 201 Course to provide guidelines for recording all educational experiences at the university. On this form the student listed for each course taken, the instructor, the semester, the grade received and a description of the course complete enough to include all practical and/or professional experience and any information helpful when applying for a job. A Personal Data Sheet was similarly used to compile such personal information as residences for the past five years, all educational experiences, work experience, general health, personal and professional references. Many students, particularly upper division students, applied the organization concept of the portfolio to their professional lives by including a resume.

One of the portfolio's greatest strengths as an instructional tool is its degree of flexibility and versatility as part of the larger learning environment. The portfolio is flexible in the range of structure or nonstructure that it can provide, which, according to the Harvey, Hunt and Schroder model (6) is an important aspect in the matching of the learning environment to the varying stages of learners conceptual complexity. The portfolio can be a highly structured activity providing for carefully delineated, incremental progress; or it can be an open-ended experience allowing for flights of abstract and creative activity.

Another indication of the portfolio's flexibility is the ease with which it adapts to any of the four approaches to teaching described by Joyce and Weil in *Models of Teaching* (7). The authors describe fifteen models which they group into four approaches, Social Interaction, Personal Sources, Information Processing, and Behavior Modification.

The models which compose the Social Interaction approach emphasize the democratic process and social and interpersonal development. The portfolio can be a group-developed book in which course problems, topics, and activities converge. Even as an individually developed activity, the portfolio can be the focus of much sharing and group-centered activity.

The second group of models that Joyce describes constitutes the Personal Development Approach. The journal-related activities described previously

discuss how the portfolio functions to develop greater levels of self-awareness.

The information processing models, which compose the third approach, emphasize a cognitive rather than affective, personal, or social approach. The information processing approach includes such models as induction methods, inquiry training, Ausubel's Advance Organizer theory, and Bruner's Concept Attainment model. The portfolio serves as an avenue for cognitive development through its use of the problem solving approach and its function in the accumulation and processing of theoretical and factual data introduced in the class. In the READ 201 course, students used the portfolio activities to integrate and apply a critical thinking model, an inductive approach to comprehension, to all aspects of the course including notetaking, textbook mastery, and exam taking.

The last approach Joyce describes is behavior modification. Characteristics of the portfolio such as providing of immediate feedback and reinforcement, allowing for the programming of information in a step by step process make the portfolio a rich tool for behavior-modification techniques.

Finally, the student portfolio can play an important part in curriculum development. Tyler (12) states that in developing a program, learning experiences need to be organized for continuity, integration, and sequence. The portfolio as a structured, on-going record and application of course topics and activities, provides this kind of organization.

Thus, depending on how the portfolio is structured and used, it is an avenue for developing the "whole" person, cognitively, intellectually, and personally; it is an adaptable and flexible instructional tool; it provides for varying needs of diverse learners; it allows for individualization and personalization in the classroom or lab; and it provides for the organization of learning experiences.

REFERENCES

1. Broudy, H. *Building a philosophy of education*. New Jersey: Prentice-Hall, 1961.
2. Cross, P. *Accent on learning*. San Francisco: Jossey-Bass, 1976.
3. Dewey, J. *Democracy and education*. New York: Macmillan, 1916.
4. Feldman, K., & Newcomb, T. *The impact of college on students*. San Francisco: Jossey-Bass, 1969.
5. Gordon, W. *The metaphorical way of learning and knowing*. Cambridge, Mass.: Synectics Education Press, 1970.
6. Harvey, O., Hunt, D., & Schroder, H. *Conceptual systems and personality organizations*. New York: Wiley & Sons, 1961.
7. Joyce, B. and Weil, M. *Models of teaching*. New Jersey: Prentice-Hall, 1972.
8. Kerstiens, G. The new learners: focus for the future. *Proceedings of the eighth annual conference of the Western College Reading Association*, 1975, 8, 1-6.

9. Peterson, R. *Goals for California higher education: a survey of 116 college communities*. Princeton, New Jersey: Educational Testing Service, 1973.
10. Sanford, N. *Where colleges fail*. San Francisco: Jossey-Bass, 1967.
11. Simon, S., Howe, L., Kirschenbaum, H. *Values clarification*. New York: Hart Publishing Co., 1972.
12. Tyler, R. *Basic principles of curriculum and instruction*. Chicago: University of Chicago Press, 1975.

FERNALD REVISITED

Betty L. Heinze
Cypress College

In any group of students enrolled in the reading clinic, learning center, remedial courses, or tutorial program, there will be a number of disabled spellers desperately seeking help. And how to help them becomes, for many, almost as desperate a problem. These students are not ready for the kinds of instruction suitable for their peers. As a result, it is often difficult to assist them in a group situation, which compounds the problem of methodology with those of staffing and resources. So what to do with this problem speller, who is probably also a problem reader and a problem student in general? The tactile-kinesthetic approach (also called the VAKT — Visual, Auditory, Kinesthetic, Tactile) can be a practical and successful means of helping such spellers, even within the classroom. It is equally valuable for those with only a moderate spelling problem who need to spell a technical or professional vocabulary accurately. Aspects of this technique are probably familiar to most reading teachers, although they may have used them only in the clinical situation. It may be useful, therefore, to mention briefly the means of identifying students who will benefit from the method, to discuss the multisensory modalities involved in such a method, and to describe a technique for word tracing with suggestions for class or tutorial use.

This concept is not new, of course. Since the pioneering work of Dr. Grace Fernald of UCLA in the 1930's, the tactile-kinesthetic method has been refined in many clinics. However, the adaptation presented here has been developed by reading specialists and teachers and used extensively in college classrooms, learning centers, and reading centers.

It should be noted here that the term "tactile-kinesthetic" is being employed throughout this paper for two reasons: first, it is commonly used and understood; second, it rightfully places emphasis upon finger contact and muscle movement in relation to the technique. However, as indicated above, the three problem areas, and those in which retraining and learning take place, are the auditory, the visual, and the nemkinetic (memory of movement). The tactile reinforces only the awareness of the texture of the surface

being traced: paper, crayon on paper or cardboard, et cetera. (Only in the braille system is the tactile sense, of itself, truly significant.) The tactile *is* important, however, to a full utilization of the kinetic modality, which is important in writing and spelling. Therefore the term "tactile" is retained in reference to the word-tracing technique.

Identifying students who will benefit from such a program has been a problem. Ideally, multidisciplinary diagnostic testing of psychological and psycholinguistic functions would be administered individually. Practically, however, few campuses are equipped to provide such services. As a result, something usually must be done quickly on the basis of standardized tests which do not identify severe problems of substitutions, omissions, and/or reversals. The Diagnostic Spelling Test: A Modification of the Wide Range Achievement Test, Spelling (Level II) does identify such problems (14, 15). If this test is not available, the Boder (or an adaptation) should be used (4).

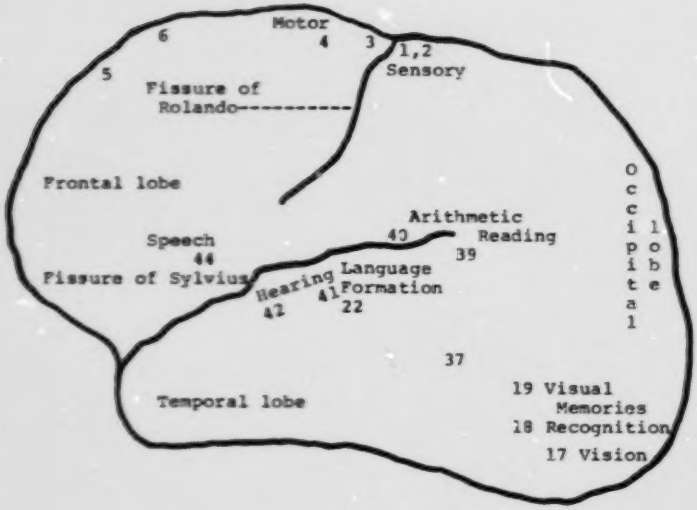
Once the student has been identified, a multi-sensory approach to learning will teach to his strengths, regardless of what they may be. Dr. Elena Boder recommends tactile-kinesthetic training for each of the three types of dyslexics she identifies: Group I, deficit in ability to "auditorize"; Group II, deficit in ability to "visualize"; Group III, deficit in both ability to "auditorize" and "visualize" (4). Dr. Howard Walton, of the Southern California College of Optometry, has identified these three groups as the dysphonetic, dyseidetic, and dysphoneidetic. He has further identified four other combinations of disabilities: dysnemkinetic (deficit in ability to develop motor gestalts for written symbols); dysphonemkinetic (deficit in relating sound and in memory of movement); dyseidonemkinetic (deficit in ability to visualize and in memory of movement); and the dysphoneidonemkinetic (deficit in areas of sound, image, and memory of movement) (22). Regardless of the specific problem, or combination of problems, the tactile-kinesthetic approach teaches to the strengths and helps retrain in the areas of weakness.

Another advantage of this method is that it is not necessary for the student to continue to trace forever. This technique will usually straighten out the circuits so that he will be able to learn words by more conventional means.

Multi-sensory modalities utilized by the tactile-kinesthetic method

Mature students will enjoy an explanation of the process of learning involved in the spelling technique. The following information might be of use in training tutors to work with the material.

The visual method of memorizing spelling words need involve only areas 17, 18, and 19. If #17 is stimulated, the individual sees flashes of light or flame. Stimulation of #18, recognition, produces images, such as cars, trees, persons, etc. A picture is formed (recognized) in #18, but it is remembered in #19. No reading occurs in these areas, however. Area 39 must be utilized for cortical vocalization. Thus only three closely related areas (17-19) need be



The Brain

(Numbered according to Brodmann's method)

used in looking at a word in an attempt to learn its form, with one additional area possibly being involved (if the student actually reads the word — #39).

The tactile-kinesthetic method of learning makes good use of eight additional areas of the brain, each of which is capable of memory. The tracing involves areas 1 and 2, the sensory, and the motor, #4. Word formation utilizes speech, #44, and language formation, as well, #22 (which is involved in structural analysis and syllable formation). When a word is spoken, the ear can hear, areas 41 and 42. In addition, the auditory and visual components of phonetic syllables and structure of words are brought together in area 37.

Thus, instead of relying upon one limited area of the brain to learn, this technique makes use of the maximum area possible — twelve, rather than three (or four, if reading occurs, which should happen but doesn't always).

The tactile-kinesthetic method of spelling for adults

Motivation plays an important part in this technique. The actual word-tracing and saying can appear deceptively simple and thus, perhaps, ineffective to a mature student. But he will have the maturity to understand the concept of coordinated sensory input, provided it is explained. (29) Such an explanation can refer to the areas of the brain as mentioned above, and

should certainly make reference to an individual's ability to learn through the senses, including not only the most obvious ones of sight and hearing but also the less obvious of touch and kinesthesis (muscle sense). All of these modalities can feed information on spelling to the brain. It is also useful, if working with a group, to mention some of the kinds of problems this technique can help solve. The student must be assured that even though the technique itself looks like simple tracing, it is much more than that. Touch, muscle, saying, hearing, and sight must be coordinated, or matched in time.

The technique is as follows. Ask the student to pretend to write a simple word (such as *body*) with his finger. It should be written so large that it takes up the whole width of a piece of notebook paper, and it must be *written* — no printing is ever used with this method. After the word has been "written" with the index finger, it should be done again with these important differences. The full arm must be on the table, including the elbow. Firm pressure should be used so that the paper is felt, and the movement should also be felt along the bottom of the arm. The finger-writing should be repeated several times, with the same big size and concentration on the pressure of the finger tip on the paper and the arm movement. The wrist should stay stiff. Heavy jackets or sweaters should be removed before working with this method. The foregoing practice is for the purpose of introducing the student to a consciousness of two senses he's probably never made use of before in spelling: the tactile and the kinesthetic.

At this point the student should be provided with a word slip (a strip 3¾" x 8" — four can be cut from one sheet of ditto paper). Each word to be learned must be written cursively, blackboard size, the full width of a slip. Students should *not* make their own word slips for obvious reasons. The student then puts his elbow on the table, and using the index finger of the hand he normally writes with, traces the word, using a pressure he can feel, while pronouncing the word aloud. It is important that the sounds of the syllables be heard — the names of the letters must not be used — and the tracing and sounding must coincide. Now any *t*'s are crossed and the *i*'s dotted. This procedure requires a not-so-simple coordination of many senses. Students should include the sound. If the saying is omitted the hearing is also lost, so two parts of the system will be missing and it won't work as well.

The word should be traced this way three times or more, and the "more" might mean ten or fifteen times. The word should be traced until the student feels he knows the spelling. Then he puts the word slip aside and traces the word with his finger on the table, keeping a firm pressure as the word is said softly. If he is not certain of the spelling, he should trace on the word slip again. When certain of the spelling, he is ready to use a pen or pencil to write it on a piece of paper, pronouncing as he writes. The spelling should then be checked against the word slip. Then everything is covered and the word written again. The process of covering, writing, and checking should be done a minimum of three times. If a mistake occurs, the misspelled word should be crossed out and the saying and tracing repeated.

It is best to use the same word slip for all students for demonstration purposes if they are working in a group. They can work on their own problem words after they have mastered the technique. Five to ten words are enough to work on at a time. Those words should be learned that will be useful to him. If he is in a class, any words he misspells on his papers can be put on word slips for him to learn. He can also request any that he wants written for him. If he is being helped in a learning center, his words can come from essentially the same sources: those he has misspelled on papers for other classes and/or those he chooses for himself. Once the technique is mastered, all that is necessary is for someone to write the wordslips for the student and perhaps to dictate a follow-up spelling quiz.

As students gradually master the words they most frequently use, it makes a surprising difference in their writing (and reading) that can make an even greater difference in their self-confidence and self-image.

REFERENCES

1. Ayers, A.J. Tactile functions: their relation to hyperactive and perceptual motor behavior. *American Journal of Occupational Therapy*, 1964, 17, 6-11.
2. Birch, H., & Belmont, I. Auditory-visual integration in normal and retarded readers. *American Journal of Orthopsychiatry*, 1964, 34, 852-861.
3. Birch, H., and Lefford, A. Intersensory development in children. *Monographs of the Society for Research in Child Development*, 1963, 28, 5. Serial No. 89.
4. Boder, E. Developmental dyslexia: a diagnostic screening procedure based on three characteristic patterns of reading and spelling. *Claremont Reading Conference Yearbook*, 1968, 32.
5. Boder, E. A neuropediatric approach to school behavioral and learning disorders: diagnosis and management. In Jerome Helmuth (Ed.) *Learning disorders* (Vol. II) Seattle: Special Child Publications, 1966.
6. Brown, B. *New mind, new body bio-feedback: new directions for the mind*. New York: Harper and Row, 1974.
7. Chalfant, J., & Scheffelin, M. Central processing dysfunctions in children: a review of research. *Monographs of the National Institute of Neurological Diseases and Stroke*, 1969, 9.
8. Cratty, B.J. *Movement and spatial awareness in blind children and youth*. Illinois: Charles C. Thomas, 1971.
9. Fernald, G.M. *Remedial techniques in basic school subjects*. New York: McGraw-Hill Book Company, 1943.
10. French, E. Kinesthetic recognition in retarded readers. *Education and Psychological Measurement*, 1960, 13, 636-654.
11. Gearheart, B.R. *Learning disabilities: educational strategies*. St. Louis: The C.V Mosby Company, 1973.
12. Gillespie, J., et al. The Diagnostic spelling test: a modification of the WRAT.

spelling. (Level II). A progress report. *California School Psychology*, Spring 1972, 19, 3, 26-30.
13. Hartstein, J. *Current concepts in dyslexia*. St. Louis: The C.V. Mosby Company, 1971.
14. Heinze, B.L. Come meet the white wrat: the diagnostic spelling test: a modification of the wide range achievement test, spelling (Level II). *WCRA Annual Proceedings*, 1977, 10, 30-34.
15. Jastak, J., & Jastak, S.R. The wide range achievement test. Wilmington, Delaware. Guidance Associates, 1965.
16. Johnson, D., & Mykelbust, H.R. *Learning disabilities*. New York: Grune and Stratton, 1967.
17. Money, J. *Reading disability, progress and research needs in dyslexia*. Baltimore: The Johns Hopkins Press, 1962.
18. Money, J. *The disabled reader*. Baltimore: The Johns Hopkins Press, 1966.
19. Myklebust, J.R. *Progress in learning disabilities*. New York: Grune and Stratton, 1971.
20. Solomon, P., & Kubzanski, P.E. *Sensory deprivation*. (Symposium at Harvard Medical School.) Massachusetts: Harvard University Press, 1961.
21. Swanson, R. Perception of simultaneous tactual stimulation in defective and normal children. *American Journal of Mental Deficiency*, 1957, 61, 743-752.
22. Walton, H.N. *Vision and reading*. Fullerton, California: Southern California College of Optometry, 1977.
23. Weber, R.E. *Handbook on learning disabilities*. New York: Prentice-Hall, Inc., 1974.
24. Wortham, M., & Heinze, B.L. *Spelling technique: a tactile-kinesthetic method for adults* (filmstrip, cassette tape, script). Anaheim, California: Tutortapes, 1977.

INTELLIGENT VIDEO DISC AS A MAJOR COMPONENT OF INDIVIDUALIZED INSTRUCTION

Richard E. Ingalls
Grossmont College

Research into the field of visual literacy has given many examples of the importance of the visual to learning. This is often overlooked in our present post-Gutenberg age.

There is a visual base for learning and we should seek out new ways of improving the utilization of this in the learning environment. One of the most promising recent developments is video disc. To understand the disc, one must first understand its physical properties. The video disc itself looks very much like a long-playing phonograph record. It is a 12-inch vinyl disc that is played on a disc player. The player itself looks much like a video tape recorder that is shrunk to one-half the size of ¾-inch U-Matic video recorder.

There are two major types of video disc. One is optical, which operates with a laser beam to read the information on the disc. The other is the capitance version, which reads the information through the use of a stylus riding in the grooves of the disc.

The optical disc will be manufactured by several companies. Among them will be principally the consortium of Phillips/MCA in this country. The disc itself is plastic, coated with aluminum and a transparent protective layer. It is either 12 inches or 8 inches wide and will sell for a price somewhat above what a record album costs. There are two types of discs. One will play for 30 minutes on one side only. The other is a two-sided disc that will play for 60 minutes per side. The machine itself will cost approximately $500. Advantages of the optical disc are that the picture can be speeded up or slowed down. Each of the 54,000 frames in a 30-minute disc can be individually referenced for search and playback and shown as still images. Fingerprints or dust will not distort the picture. The disc can be made thick, or thin enough to be sent through the mail. The disc's life is virtually unlimited and the machine's optical pickup element will survive over 10,000 hours of use.

The capitance system is being developed by RCA. The disc itself is made

up of vinyl copolymer coated with metal, dielectric and lubricant. It is 12 inches wide and will sell for approximately $10 per 2-hour disc. The machine itself will cost approximately $500. The capitance disc will last in excess of 500 plays and the stylus must be replaced after about 500 hours.

The RCA capitance system offers advantages in manufacturing ease, which may make it possible for many of these machines to be commercially available soon after introduction. However, that is its only advantage to the consumer. The MCA/Phillips optical disc offers the extremely important function of searching for and of individually playing each of the 54,000 frames on its 30-minute-play disc.

By attaching a small, $2,000 computer to the disc playback, computer-assisted instruction is possible. Using the first few hundred frames in a disc, all information needed to program the computer can be provided. The next 53,000 plus frames can be individual units of information. This information can be selected automatically by the computer or manually by the operator. Students can be presented information in a completely visual manner. The disc can then ask the student to respond to questions. According to how the student responds, the disc will select the next information. For example, if a student answers the questions correctly, the program can switch him to the next level of material to study. If he answers incorrectly, it can switch him to a review or to new background material. The flexibility of this system is limited primarily by the capability of the programmer to anticipate student needs.

In the past, to produce computer-assisted instruction one had to rely on expensive systems, often requiring a central computer and offering very little visual display. The advantage of the video disc with microprocessor is that for approximately $2800 for a monitor, disc player and microprocessor, the instructor is offered a virtually unlimited capacity computer. Each video disc provides the memory needed for that particular program.

The discs themselves are exceedingly inexpensive, as reproduction costs are approximately $1300 for the first program and 60¢ for every program thereafter. Therefore, the per program costs go down in proportion to the number of copies reproduced. Each student can carry his own program rather than have it stored in a central computer.

There has been much talk about the availability of the video disc. It has been offered for sale "approximately next year" for the past few years now. There are some reasons to expect that 1979 will begin the full deployment of this medium. MCA has just established a video disc reproduction manufacturing facility. They have also contracted with Pioneer Electronics of Japan to begin video disc sales in Japan this year.

Generally speaking, we can see how the video disc will fit into the current level of proliferation of television within this society. Television made its first big mark in 1954 with only five thousand sets in people's homes. By 1964 that had risen markedly to one and one-half million sets. There were five and one-half million sets by 1969. Americans' leisure-time money in

1976 was one hundred fifty million dollars, enough so that ten percent of color television owners in this country have indicated that they would buy a video disc machine in the first year of its introduction. There is already a wealth of material available for distribution. MCA has in its vaults 11,000 film titles and all other major motion picture producers are interested in translating their programs to video disc. Added to this will be "how to" programs, such as Arnold Palmer explaining the back stroke and Julia Childs explaining leg of lamb. New programs are already being manufactured in Great Britain for the video disc market.

Many other video applications are being devised in American education. One very recent example of this is the use of video satellites. There has been much explorative work done with video satellites to check their potential for learning. Most of the experiments have been exceedingly positive. There is also an increased reliance upon computer-assisted instruction in the learning environment.

By introducing low-cost technology with the combined versatility of video and CAI, the education marketplace should change dramatically within the first decade of video disc introduction. We will have the capability of video combined with the computer. This combination may provide for its own very unique learning situations which could be greater than video or computers on their own.

Two things will slow down the introduction of video disc into education. One, that schools and colleges would unwittingly buy capitance or two-hour optical disc playback devices, not knowing that these will be incompatible with computer-assisted instruction. Secondly, schools and colleges will not know enough about the potential of the video disc in learning to plan for its immediate inclusion into the learning environment. Barring this, 1979 should be an extremely exciting year for increased learning potential of America's students.

REFERENCES

1. Ingalls, R. E. *Cost effective selection development and dissemination of interactive learning programs through video disc in community colleges.* Unpublished proposal, Grossmont College, 1977.
2. Ingalls, R.E. *Visual literacy bibliography*. Unpublished bibliography, Grossmont College, 1976.
3. Wittrock, M.C. Guest Editor, *UCLA Educator*, 1975.

READABILITY'S USEFULNESS FOR DEVELOPMENTAL COMPOSITION

Dennis J. Konshak
Seattle University

Pedagogical benefits accrue from having one person responsible for developmental programs in both reading and composition! I was responsible for initiating both types of programs in the Learning Skills Center at Seattle University, and I found that much cross-pollination occurred. The Reading Lab was the first to be created; and, when faced with the task of adding a Writing Lab, I found much already in the Reading Lab that would help the new Writing Lab flower. First, I used the vocabulary enrichment materials and equipment as part of the Writing Lab course. And, of course, the programmed spelling texts were germane. And then, I decided to ascertain if the Fry Readability Scale could be a useful tool to help my Writing Lab students chart the improvement in their ability to write academic prose.

For the Reading Lab students, the sweet scent of success was highly tangible: I pre-tested in comprehension grade level, vocabulary grade level, and reading rate. Hence, when the quarter ended and post-tests were given, all students could assess their growth in these three areas. Improvement was tangible, self-esteem grew. The Writing Lab students almost all needed improvement, not in basic mechanics and grammar, but in such ephemeral areas as style (word choice, sentence variety) and paragraph/composition structural organization. Often, with these students, I would read an essay, finding few technical errors, but still being basically dissatisfied with what had been written because it did appear sophomoric (high school sophomore, not college sophomore). So how could I explain to these students what I saw as their needs; and, for further exasperation, how could I show them when they had achieved some growth. I decided to experiment to see if doing readability on their writings would achieve these ends. I selected ten students who were enrolled in the Writing Lab course for Spring Quarter, 1977, and charted the readability of their writings on a pre-test and post-test.

According to the Fry Scale, readability is dependent upon the total number of syllables and the number of sentences in a one hundred word sample. Hence, increased readability means the student is using longer

sentences and more multi-syllabic words. The assumption that these variables represent better writing is somewhat tenuous. Longer sentences are not necessarily "better" written and multi-syllabic words are not necessarily more precise and evocative than shorter words. But, when assessing an individual student's writing over a period of time, it should hold true that this student writing longer sentences than previously does entail enhanced syntactical sophistication, *for that particular individual*. Hence, I hypothesized that the use of readability, applied to a student's writing at different times over a course in composition, would yield an accurate measure of increased sophistication in writing.

The first writing assignment I gave the students, for placement purposes, was to write a one paragraph summary of an essay, "Third Parties and Reform," from Mary Lou Conlin's *Concepts of Communication*. (1:10-12) As part of the final exam for the course, I had students write a one paragraph summary of another essay from the same text, "The Feminist Movement: A Quest for Equality" by Mary Horsington. (2:283-5) I selected these two essays because they had almost identical readability (10.6), based upon two one hundred word samples. Hence, the assignments were nearly identical, with the only variable being the improvement in the student's writing skills. The second essay was longer than the first: 1,501 words versus 1,010 words, but *each* student's second paragraph (post-test) was also longer than their pre-test paragraph, in about the same ratio (3/2) as the length of the essay being summarized! On the pre-test, the readability scores started at ninth grade and ranged upward to one student with twelfth grade readability. On the post-test, two students had college level readability and three students had twelfth grade readability; but, most importantly, *nine out of ten students had higher readability scores on the post-test than they had on the pre-test*. Thus, improvement in writing did coincide with an increase in the readability of a student's composition.

I would like to discuss three samples of student writings, from pre-test and post-test, to demonstrate how changes did occur and how readability checks charted these changes.

First, I will discuss a student whose pre-test readability was 8.0 and post-test readability was 10.5, appearing exactly as the student wrote, except I have numbered the sentences:

Pre-test paragraph

> 1. The main idea of this essay is how third parties affect the american way of life with three major reforms. 2. The author Mary Lou Conlin used three examples. 3. She states the first reform dealt with the workingmen's Party, which was organized in Philadelphia in 1828, helped bring about current improving working conditions for the working man. 4. The second reform was made through the efforts of the Free-Soil Party which started the civil Rights movement around 1848. 5. The last reform which brought together the

farmers and workers in 1892 was the Populist Party. 6. The author says "even though the United States is said to have a two-party political system, nearly all the reform movements have been initiated by third parties". 7. The third parties caused the main two party people to listen and act on their grieps.

Post-test paragraph

1. The Feminist Movement: A Quest for Equality is written by Mary Horsington. 2. The essay deals with the way the feminists' movement have come along way from 1830 to today in the 1970's. 3. They start by saying that the 1830's women were deprived of education and equal education became the chief objective of the early movement. 4. Next came reform in the area of political organization. 5. In order to help themselves they needed political experience. 6. E. C. Stanton and L. Mott were even allowed to participate in a World Anti-Slavery Convention in London, which resulted in the gathering of 250 women in Seneca Falls, New York, the first convention of the women's movement in America. 7. The third area of reform was in employment. 8. Women were paid low wages and work over 12 hours a day. 9. The women movement wanted better conditions plus allow women to keep their wages and chance for job promotion. 10. The essay ends with the notion that male dominance has finally ended and that this sexual revolution we are having is wiping out the marriage and the family. 11. The equal ground where we can all be content lies between the "women's libber" and the "male chauvinist pig".

In spite of the post-test paragraph not being impeccable, I do think the writer has grown more sophisticated in his style. And readability seems to buttress this position. Why the increase in readability? The post-test does have the excellent long sentence (#6), in which the writer uses both a subordinate "which" clause and an appositive. Also, look at the main verbs used in each sample: the pre-test includes "is, used, states, was made, was, says, caused"; while the post-test includes "is written, deals (with), start, came, were allowed, was, were paid and work, wanted, ends, lies." The writer's main verbs have become less static and more active, less mere placeholders in the sentence and more at the core of the meaning, resulting in more multi-syllabic verbs with attendant higher readability!

The second student's writing to be analyzed went from a pre-test readability of 11.75 to a post-test readability of 12.8. I only include the first sentence from this student's pre- and post-test:

Pre-test

The controlling idea of the essay written by Mary Lou Conlin gives a

short referring of third parties and Reforms, based on the United States political system.

Post-test

The essay written by Mary Horsington emphasized the feminist movement from around 1830 to the movement of the nineteenth century.

Notice the S-V-O order of the post-test, "essay emphasized-movement." versus the S-V-O order of the pre-test, "idea-gives-referring." The verbosity of the original has been cured: thus, "The controlling idea of the essay written by Mary Lou Conlon..." becomes the succinct "The essay by Mary Horsington...". Further, "gives a short referring" in the pre-test becomes "emphasized" in the post-test. The change here is remarkable! Notice how curing verbosity does not doom readability to lower levels.

For the third student, I quote only the first hundred words:

Pre-test paragraph (first hundred words)

1. Mary Lou Conlin essay on "Third Parties and Reform" is reflecting on the contribution third parties have given to our present day government. 2. The Workingmen Party was organized in 1828 to ensure a better life for the working class. 3. Due to the popularity of their demands for the reform the Democratic Party assured the Workies if they joined the Party they would support reforms. 4. The 8 hour working day, 40 hour working week, free education, right to join a union and the right to strike we owe to the efforts of the reforms of a third party movement. 5. Anti-Slavery reforms were also do to efforts of a third party movement. 6. The issue to abolish slavery was...

Post-test paragraph (first hundred words)

1. The Feminist Movement: A Quest for Equality is an essay presented with an historical background which gives a much boarder insight in the woman's movement of today. 2. One rarely associates the "woman libber" of today with the reforms of the political, economic, and social equality credited to the woman's liberation movement throughout the history of this country. 3. Looking back over the time spa and the reforms credited to woman, the struggle has been long and hard. 4. Woman started receiving a somewhat equal education, not due to their own efforts but because of the decline in male enrollment, women are being admitted to schools of higher education. 5. The...

The readability here went from 9.2 to college level. The improvement in this student's writing can best be seen by listing the clauses and verbal phrases. The pre-test one hundred word sample includes an adjective clause (#1), an infinitive phrase (#2), and a noun clause (#3). The post-test one hundred word sample includes a participial phrase (#1), an adjective clause (#1), a noun clause (#2), two participial phrases (#3), and a gerund phrase (#4). The improvement in the variety and complexity of syntactical structure is obvious. Ironically, now that the student is using participial constructions a new error is available: dangling participles! Nevertheless, increased use of clauses and verbal phrases (as subordinating devices to replace simple sentences) yields a higher readability for this student's post-test.

In each of the above student samples, we can see the changes evident in the student's writing from pre-test to post-test, but the student has no sure measure. The type of analyses that I have done of changes are not readily accessible to student understanding. If I tell a student that his writing has improved because he's using clauses and verbal phrases as subordinating devices to replace simple sentences, I am sure to draw a blank stare as response. But, if I tell him that his readability is now 12.2 rather than 9.3, he does believe a positive change has occurred. Here readability has its greatest potential for use with students: to improve student self-awareness of progress. As mentioned earlier, my reading improvement classes always have had a tangible measure of success through standardized test scores. Now, I use readability on pre-test and post-tests with all my writing students so that they, too, may taste the fruit of their labor. Readability provides a clear indicator of progress, without generating any anxiety, since I placed the readability scores outside the grading structure of my classes. That is, course grades do not depend on the readability score in any way. A readability analysis of a student's essay is purely for informative purposes.

Readability is also a way of showing students that their writing, though technically correct, is still in need of improvement. Often I will read a student's sophomoric composition, reflecting on the voice I perceive behind the words, and note the disparity in the maturity of the individual before me. I point out to the student some ways he could have combined several sentences, explaining how this would improve the flow of his writing, reduce the number of words used, and make his style more sophisticated. When I subsequently assign the student some exercises in sentence combining, he persues them avidly. Readability can thus serve some diagnostic purposes.

Other uses of readability for composition teachers might be in reporting to government agencies. The Learning Skills Center of Seattle University is funded by an Office of Education grant; and, with the increased cacophony of voices demanding accountability, readability may be a way to satisfy funding sources that program intervention has been meaningful. Readability could become akin to "hard" Nelson-Denny Reading Test scores.

These uses of readability suggest only some of the creative possibilities for the teacher of developmental writing. Perhaps readability formulas

ought to be subsumed by us teachers of composition under the aegis of writeability?!

REFERENCES

1. Conlin, M. L. *Concepts of communication* (Instructor's Guide). Boston: Houghton-Mifflin, 1975.
2. Conlin, M. L. *Concepts of communication* (Summary Module). Boston: Houghton-Mifflin, 1975.

DEVELOPING AND MEASURING MATURE SYNTAX

Barbara Tomlinson and Marcia Strachley
University of California Irvine

The instructional aim to be discussed in this paper is the facilitation of increased control, flexibility, and complexity of students' syntax; discussion of this aim will be followed by an exploration of a number of methods for determining whether or not that aim has been met. Before students are provided with exercises to develop their syntactic control, they should gain knowledge of syntax implicit in their use of language. The teacher then may capitalize on a basic linguistic skill that is learned implicitly as language is learned; if students gain conscious use of this skill they realize that intentional control of syntactic patterning further refines a skill that otherwise remains at a less effective, subliminal level. This initial instructional approach is based on Chomsky's designation between "performance" and "competence" in linguistic skills (4); specifically, the introductory devices to be delineated employ students' basic competence levels in order to develop their performance levels. The discrepancy between an individual's ability to recognize and understand correct syntax and his inability to employ mature syntax can be useful. As students extend conscious control of their competence, they are able to develop increased facility with syntactic patterns in their written performance.

Presenting syntax in an accessible manner to motivate students

Students may achieve marked improvement in vocabulary, and in organizational and rhetorical techniques, but still employ only an elementary level of syntax. The consequence of this is the impediment of fluidity and complexity of students' expression. Students often acknowledge this sense of limitation in talking about their writing; the possibility of increased facility in the communication of difficult ideas serves as a self-motivation for students as they begin to involve themselves with practice in syntax.

Non-Sentence Practice elicits students' awareness of implicit syntactic knowledge. When presented with a sentence disorganized into an a-syntactic

pattern, students note the crucial influence that syntax exerts in ordering words into sensible relationships: "Time threw and pieces crowd the all shouted of wine whistling up the then ring bull and keeping bottles into bread down leather cushions the." Students often attribute "meaning" or semantic value only to the lexicon of a sentence, since they can define easily the words in the sentence. As students grapple to make sense of a disordered sentence, they recognize that the syntactic order is as significant to meaning as the lexicon, and in fact is essential to semantic value. After students have attempted to reorder the words themselves into a meaningful order, provide them the corrected version of the non-sentence: "Keeping up whistling, the crowd shouted all the time, and threw pieces of bread down into the bull ring, then cushions and leather wine bottles" (*In Our Time*, Hemingway).

Reinforcing understanding of mature syntax

To reinforce syntactic understanding and to aid the transfer of implicit knowledge into explicit practice, Nonsense-Sentences Practice is useful. In this exercise, students observe the direct inverse of the previous exercise; this practice offers sentences with correct syntax, but without recognizable words: "Twas brillig, and the slithy toves / Did gyre and gimble in the wave . . . The Jabberwock . . . Came whiffling through the tulgey wood. / And burbled as it came" ("Jabberwocky," Lewis Carroll). The syntactic pattern is emphasized by the employment of nonsense words. Students recognize that they can decipher more "meaning," more interchange and relational interaction from these nonsense words than from the disordered sentence of easily recognizable words in the first example. In addition, students can learn grammar, and practice recognizing parts of speech more effectively than in ordinary sentences. They recognize the subject and predication, the modifying phrases and clauses, and the subordination of sentence elements by being forced to address only the grammatical relationships without known nouns and verbs acting as markers to guide them; thus increased sensitivity to purely grammatical interchange and syntactic patterning is reinforced, readying students for actual practice in syntactic patterning.

Transfer of competence into performance: syntactic patterning

A brief session of syntactic rearrangement provides the initial step into syntactic patterning. The same nonsense-sentence demonstrates how the syntactic units can be shifted and rearranged: "Burbling as it came, the Jabberwock came whiffling through the tulgey wood." Students may experiment with their own nonsense-sentences by writing and rearranging them.

Syntactic Patterning Practice is one of the developmental exercises that should be emphasized in instruction. After being presented word definitions, examples, and recognition-practice of the four kinds of sentences (detailed explanations of phrases and clauses is essential), students will begin syntac-

tic transformations. The instructor should first provide an example of, and ask them to write, a kernal sentence, or syntactic unit:

The storm brewed ominously

Then add a prepositional unit:

The storm brewed ominously/over the desert.

Then add modification:

Throughout the night/the storm brewed ominously/over the desert.

Then add a second independent clause:

Throughout the night the storm brewed ominously over the desert/and concerned inhabitants began to evacuate the area.

Then add a subordinate clause:

Throughout the night the storm brewed ominously over the desert; the concerned inhabitants began to evacuate the area when hurricane warnings were broadcast.

Students should repeat this transformational sequence beginning with a new kernal unit each time until they gain facility in adding syntactic units and flexibility in rearranging them.

Syntactic embedding and recombining in students' stylistic development

The final application necessary to make syntactic exercises pertinent to students' regular writing activities is to have them apply these lessons to their standard expository assignments. At this stage, they should employ their own syntactic patterns. It may be advisable to provide an exemplary sequence of sentences that can be recombined and embedded. (15) Students should attempt to combine and rearrange the syntactic units within sentences for more subtle and fluid ordering of ideas; further, series of shorter, broken sentences should be embedded and recombined into more complex syntactic arrangements. By employing their own past written work as a basis for syntactic exercises, students transfer their previous practice with syntactic patterning to their own stylistic performance, thus effecting direct development in their ongoing writing effort.

Indices of maturity in written syntax

This portion of the paper is devoted to an exploration of methods for determining whether or not students have "matured" in their use of written syntax. Methods include those which bring grammatical usage under control, those which increase length of syntactic subdivisions, those which explore extent and type of subordination, and those based on sentence-combining transformations.

Usage errors as an index

Usage errors are a traditional but invalid method of determining syntactic maturity. First, there is a large subjective component on any determination of what is to be considered acceptable usage (14), so that classification becomes rather arbitrary. In addition, students developing their writing skills are constantly bringing new potential sources of flexibility to their basic syntactic structures. It is possible that a low rate of usage errors reveals failure to incorporate new, more mature syntactic strategies; a high rate may accompany new syntactic experiments which will result in increased syntactic control. The total language competence in the student's repertoire may not be revealed by his performance at any particular time; many students, when asked to "reread and edit" papers for sentence and/or usage errors, can and will correct those errors; the students are not increasing their competence, but their performance.

Clause length as an index

Another traditional measure for assessing increasing complexity and maturity of language use is mean number of words per clause. Recent research indicates that clause length can be used as a measure of growth, but that the lengthening occurs with "glacial slowness" in the early grades (9, 7). Nevertheless, as students move through the grades they do write longer clauses (8, 12, 13).

Extent and type of subordination as indices

Exploring extent and type of subordination as indices for syntactic maturity is based on the rationale that changes occur due to the development of ability to think in a different and more mature manner about the relations between various concepts being considered, as well as due to the development of ability to control syntactic structures. Subordination allows the writer to explore more complex propositions with a more coherent organization. Hunt (8) proposes a ratio of total clauses (subordinate and main) to main clauses as a measure of extent of subordination. This and other subordination counts have shown distinct increases with increase in grade level (5, 6, 7, 10, 11, 13). The proportion of each type of subordination also changes over time, with an increase in number of noun, adjectival, and adverbial clauses (7, 8, 9, 10).

Sentence length as an index

Sentence length as an index of maturity, while apparently useful, suffers from issues of definition and of application. Researchers have not always defined sentences by the same "rules" (13). Hunt's definitions of "whatever the writer puts between a capital letter and a period or other terminal mark" solves this definition problem, but leaves open the question of how to deal with discourse abounding with sentence fragments, such as that of fourth grade students who tend to run together without punctuation or coordination what would otherwise be considered many sentences. Because of these problems, the tendency for sentences to lengthen over the grades is obscured; the most immature writers, who fail to recognize and control basic syntax divisions, will receive the highest score on this index of maturity (8).

Sentence-combining transformations as an index

The rationale for use of mean number of sentence-combining transformations is based on theories of transformational grammar. Braun and Klassen measured syntactic maturity by a method "essentially of reversing the normal generation of a sentence . . . (and identifying) the frequency and complexity of transformations employed in producing a sentence..." (2:315) The use of sentence-combining transformations does increase over time, but Hunt (9) notes that it is not just the increase in use of sentence-combining constructions which characterizes older writers, it is also the use of a wider variety of such transformations.

T-Unit length as an index

The T-unit, or "Minimal Terminal Unit," was defined by Hunt as "one main clause plus any subordinate clause or non-clausal structure that is attached to or embedded in it . . . cutting a passage into T-units will be cutting it into the shortest units which it is grammatically allowable to punctuate as sentences. In this sense, it is minimal and terminable." (9) He feels that T-unit length is better than single indices such as average length of main clauses or increase in number of subordinate clauses, because it "preserves all the subordination achieved by the student, and all his coordination between words and phrases and subordinate clauses," but devalues the coordination between clauses which makes fourth grade writing immature. Hunt also reports that there was complete agreement of identification of T-units "so long as the judges were confronted with well-formed sentences either declarative or interrogative." A large number of studies using T-unit length have verified its ability to show evidence of maturation (2, 3, 5, 8, 13). We must conclude with O'Donnell et al. that T-unit length is indeed a "simple, valid indicator of development of syntactic control."

Summary

This paper has attempted to provide a sequence of instruction which may result in increasing students' abilities in manipulation and control of syntax.

It has also attempted to provide an overview of methods which may enable the instructor to determine the effects on student writing of instruction in syntactic flexibility. Evidence from this review implies that a number of measures may provide clues about the maturation in control of written syntax: clause length, subordination indices, type of subordination and unit length, indices of sentence-combining transformations. Other methods, such as incidence of usage errors and length of sentences, are not as valuable. Certainly the index presently most useful to the teacher assessing change and maturation in written syntax is length of T-unit since it is easy to count, simple to use, objective, and demonstrates a clear progression toward maturity in syntactical control.

REFERENCES

1. Allen, J.B.P. and Corder, S.P. *Papers in applied linguistics, II*. London: Oxford University Press, 1975.
2. Braun, C. and Klassen, B. A transformational analysis of written syntactic structures of children representing various ethno-linguistic communities. *Research in the Teaching of English*, 1973, 7, 312-323.
3. Bryant, Y.L.L. Language achievement of fifth, eighth and eleventh grade students as determined by an analysis of written compositions. (Doctoral dissertation, North Texas State University, 1970). *Dissertation Abstracts International*, 1971, 31, 5024A. (Order No. 71-8664).
4. Chomsky, N. *Aspects of the theory of syntax*. Cambridge: M.I.T. [illegible], 1965.
5. Dauterman, F.P. The syntactic structures employed in a sample of narrative writing by secondary school students. (Doctoral dissertation, The Ohio State University, 1969). *Dissertation Abstracts International*, 1970, 30, 4434A-4435A. (Order No. 70-6757).
6. Frogner, E. Problems of sentence structure in pupil's themes. *English Journal*, 1933, 22, 742-749.
7. Harrell, L.E. Jr. A comparison of the development of oral and written language in school-age children. *Monographs of the Society for Research in Child Development*, 1957, XXII, (3 Serial No. 66).
8. Hunt, K.W. Grammatical structures written at three grade levels. *National Council of Teachers of English Research Reports*, 1965, (No. 3).
9. Hunt, K.W. Syntactic maturity in schoolchildren and adults. *Monographs of the Society for Research in Child Development*, 1970, 35(1 Serial No. 134).
10. LaBrant, L.L. A study of certain language developments of children in grades four to twelve, inclusive. *Genetic Psychology Monographs*, 1933, XVI(5).
11. McCarthy, D.A. Language development in children. In L. Carmichael (Ed.), *A manual of child psychology*. New York: Wiley & Sons, 1946, 1954, 492-630.
12. O'Donnell, R.C. An objective measure of structural complexity in children's writing. Paper presented at a meeting of the Educational Research Association, 1968.

13. O'Donnell, R.C., Griffin, W.J., Norris, R.C. Syntax of kindergarten and elementary school children. *National Council of Teachers of English Research Reports*, 1967, (No. 8).
14. Pooley, R.C. *Teaching English usage*. New York: Appleton-Century-Crofts, 1946.
15. Strong, W. *Sentence-combining*. New York: Random House, 1973.

ABSTRACT

A SELF-PACED COLLEGE DEVELOPMENTAL READING PROGRAM USING PSI (PERSONALIZED SYSTEM OF INSTRUCTION)

Nancy Steiner and Ladessa Yuthas*
Metropolitan State College

The PSI model of instruction was incorporated into the introductory reading improvement course at Metropolitan State College, Denver, Colorado, in the fall of 1977. Five essential principles are involved in PSI: 1. Development of modules which emphasize use of written materials including exercises and worksheets related to textbooks. 2. Students must master the material in each module,as demonstrated by passing a mastery test, before proceeding to the next module. Students may retake all tests except the final, to improve a grade. 3. Students move at their own rate (self-pacing) and take mastery tests when ready. This is a special advantage for older students at an urban college with many job and family responsibilities. 4. Lectures are for interest, motivation, more than for imparting critical information. Class activities include reading exercises such as skimming and scanning, critical reading, applying SQ3R to college textbooks, and working through modules, as well as encouraging lagging students, and administering and scoring mastery tests. 5. The use of proctors. Para-professionals, students, or peers in the class may serve as proctors in correcting and discussing mastery tests or material from the modules.

Good course management, development of clear and effective modules, selection of interesting supplementary course activities, and *flexibility* are essential if you are to use PSI.

*Nancy Steiner, *Box 17, Metropolitan State College, 1006 11th Street, Denver, Colorado 80204*

INNOVATIVE INSTRUCTION SYMPOSIUM REPORT

Ann Peterson Coil
California State University Fullerton

The course of learning assistance is a comprehensive, multifaceted, and challenging one. Those involved with reading and learning programs are simultaneously counselors, facilitators, instructional managers, curriculum designers, academic instructors, and evaluators.

The three grants for innovative instruction in reading which have been awarded to the Fullerton Reading Program by the Chancellor's Office of the California State University and College system have not only provided the resources to "refit the ship," but have also given the CSUF reading faculty the impetus to explore the broad context of reading as it relates to higher education at program, campus, state, and nation-wide levels. This paper will share some of the insights gained through research, exploration, and work on the grants.

National perspectives

New demands and challenges are being thrust upon post secondary institutions as a result of the movement from meritocratic to egalitarian educational models. Pat Cross, in *Accent on Learning* (1), delineates this movement historically.

Education in the 1950's was characterized by "academic excellence." A plethora of talented and able students waited to fill few available academic spaces. Jobs and money were plentiful, the student body was select and homogeneous, and learning problems were felt to be problems with the students, not with the institution.

The cry in the 1960's was equal opportunity. The task of education was no longer to teach the select few, but to educate the masses to their full human potential. Open-admissions policies replaced strict, selective procedures, and the rate of college-bound high school students reached a peak by the end of the decade. Institutions of higher education, accustomed in the past to dealing with only the most able and carefully groomed students, were

being confounded by the influx into academia of socially, economically, ethnically and educationally diverse students. SAT scores declined and students were not as proficient as their predecessors in reading and writing skills.

The decline in communication skills seemed to be a concomitant of decline in thinking skills, the ability to operate at the higher levels of analytical and evaluative thought. Students also seemed to lack intellectual skills which involved independence in learning, skill in scientific inquiry and problem solving, and the ability to synthesize knowledge from a variety of sources. Thus, came the cry in the 1970's for quality of education.

According to Cross (1), higher education in the 60's and 70's has proven it can open doors, but has not proven that it can deliver a practical and useful education to those whom it admits. The difficulty has arisen, Cross maintains, because educators have been consumed with the access model of education which focuses on administrative rather than instructional activities. This model describes students in terms of demographic data rather than in terms of their characteristics, needs, and goals.

What is needed is for the access model to be supported by a new and flexible model of education which emphasizes and provides for individual differences. This model should be broad-based in its goals and provide a variety of new and creative approaches to teaching and learning which take into account differences in learning style, rate and motivation. Reading and learning assistance programs are providing such models.

State-wide perspective

In the state of California concerns for quality education, the goals of education, and curriculum innovations have resulted in a series of joint conference and work shops between the University of California and the California State University and College system. The findings and recommendations of these joint conferences have many implications for reading and learning assistance programs. It was the assumption of the conference planners that the problems of basic skills and the entering students were substantially the same for both systems. Thus, the goal of the two systems was to articulate common concerns and explore ways to increase the level of cooperation where problems converge. The focus of the conference was to re-examine the basic curriculum in light of the latest knowledge of the acquisition of basic skills and the learning needs of the "new students," as defined by Pat Cross.

The conferences have brought together representatives of both systems in the following basic skills areas: reading, writing, mathematics, basic sciences, and the social sciences.

Four basic concerns expressed at the first conference serve as the framework for continuing discussions and exploration by the joint committees:

1. Regional efforts of cooperation between school systems and colleges in a clearly defined region.
2. Cooperation with high schools and community colleges.
3. The use of diagnostic tests as tools for understanding the knowledge and competencies of our entering freshmen.
4. The learning styles of students.

Each basic skill committee has presented specific recommendations and areas for further discussion and exploration. These recommendations are published in the conference proceedings, *Entering Freshmen: Their Specific Education*, Phase I and Phase II, published by and available upon request from the Office of the Academic Vice President, University of California, Berkeley, California, 1977 (2).

Campus-wide perspective

California State University Fullerton is also concerned with the role and goal of higher education and the issue of quality education. CSUF President, L. Donald Shields asked various campus representatives including students, faculty, and alumni to serve on a Commission for the Future. The commission's mandate was to explore the current status of CSUF and determine the direction it should take in the future. The conclusions drawn by the commission are consistent with the directions taken by the CSUF Reading Program and the three grants.

They include the following:

1. The need for critical thinking, integration and synthesis for knowledge, and skill in the problem solving process;
2. The need for a flexible curriculum structure and varied learning options such as student/faculty research, self-pacing, contract courses, team teaching and mini-courses all of which are part of the CSUF Reading Curricula;
3. The need for student and faculty awareness of the contribution of student support services to the overall educational efforts of the university;
4. The importance of the student's self-evaluation and greater understanding of the extent and limitations of his own competencies;
5. The need to have more practical, field based educational experiences.

Program-perspective

The Reading Program at California State University Fullerton is addressing the concern for quality education and innovative instruction through a comprehensive process of program evaluation and a restructuring of the reading curriculum. The results of an intensive program initiated in 1976 to assess the needs and characteristics of the students enrolled in the

Reading Program resulted in data which confirms Pat Cross' exhortation to develop a flexible model of education which emphasizes the individual.

The work done through the Chancellor's Innovative Grants has resulted in two curriculum development models: A critical reading/thinking model, and a hierarchical model of the academic improvement process. The models are unique in that they simultaneously integrate and account for 1) personal and intellectual factors as well as academic factors; 2) continuity, sequence, and integration of learning experiences — a synthesis of the cognitive strategies usually described in random fashion in the literature; and 3) creative and flexible instructional approaches as defined by Bruce Joyce in *Models of Teaching* (3).

Implications

At all levels, the emerging role of reading and learning in the academic curriculum is gaining increasing attention. In many cases, this attention engenders opposition from those who don't understand the complex nature of reading and learning, its interrelatedness to thinking, and its role in the cognitive and affective development of the student. By teaching reading we are teaching thinking. Since the essence of higher education is to guide students to higher levels of cognitive functioning, instruction in reading should be an integral component of the college and university curriculum. As reading professionals, it is our responsibility to communicate the dynamics of our discipline and its vital role as a partner in the academic community and to generate acceptance of reading instruction as a significant component of the academic structure. We must:

1. Gain a greater understanding of our varied and complex roles as reading and learning specialists.
2. Gain a greater understanding of the social context and its implication for our students, our programs, and our institution.
3. Be aware of the needs of the "total" student as reflected in broadly based goals of education that include academic, intellectual, social, emotional and moral maturity.
4. Explore more comprehensive and accurate methods of assessing the needs and characteristics of students and the demands of their particular campus environment.
5. Develop more flexible and varied learning options in terms of scheduling and means of delivering instruction.
6. Develop more innovative and creative instructional approaches to respond to diverse learning styles.
7. Be at the forefront in breakthroughs in knowledge about teaching, reading, and learning through research and the faculty development process.
8. Develop awareness of reading and learning as a discipline with a growing body of knowledge supported by empirical data.
9. Share this information with colleges in and out of the field.

10. Articulate the nature of this discipline in a language that is acceptable to our academic colleages outside of the field.
11. Initiate articulation between varying higher education institutions and systems and dialogue with feeder secondary schools.

REFERENCES

1. Cross, P. *Accent on learning*. San Francisco: Jossey-Bass, 1976.
2. *Entering freshmen: their specific education, phase I and phase II*. Berkeley, California: Office of the Academic Vice President University of California, 1977.
3. Joyce, B. & Weil, M. *Models of teaching*. New Jersey: Prentice-Hall, 1976.

THE UNC READING-WRITING IN THE CONTENT FIELDS PROGRAM BRIDGES THE GAP BETWEEN LANGUAGE AND CONTENT

Myrna Compton and Robert A. Pavlik
University of Northern Colorado

The transfer of reading and writing skills from language classes to content field classes is not automatic. Classroom teachers need to know that, ultimately, they determine whether or not and how well their students use reading and writing to deal with content.

Most teachers, however, do not know how to give specific help when students have difficulty reading directions, graphs, experiments, background explanations, or definitions. Nor do they know how to help when students are asked to communicate their understanding and application of content through the writing of essays or term papers. Instead, many teachers direct their students to "Read the chapter *very* slowly!" or "Organize the paper." These directions usually prove valueless to students struggling with textbook language.

The University of Northern Colorado (UNC) at Greeley, Colorado began a five-year program in 1976 that is concerned specifically with this problem. The Reading-Writing in the Content Fields Program is based on the assumption that good instruction cannot separate the teaching of communication skills from the teaching of content.

The program draws much of its basic philosophy from the works of Jean Piaget and Benjamin Bloom. As teachers experiment with the various methods and materials for diagnosis and instruction in the content fields, they are continually examining the language of their content as it relates to Piaget's concrete and abstract levels of operation as well as Bloom's levels of general skill: analysis, synthesis, and evaluation.

A unique aspect of the program is that it involves university faculty members, public school teachers, administrators, graduates, undergraduates, and public school students. Presently there are educators from biology, business, earth science, history, journalism, mathematics, physics, psychology and political science participating. While 65 public school teach-

ers and administrators from 18 public school districts and 43 UNC faculty members and graduate assistants work together to develop diagnostic instruments and methods that will improve the instruction of reading and writing in the content fields, both university and secondary school students benefit. Many of the participants are considered to be key people in their area or schools and are participating in the program in order to return to their local schools and initiate a similar sort of interaction with their staffs. The number of students being affected by this thrust is encouraging.

The materials and methods that are developed through the interaction of content educators from different levels of education and reading and writing specialists are the result of combined experimentation and discussion. This is not a program that attempts to apply reading and writing jargon and methods over the top of content. The educators involved in the program are striving to bridge the gap between the teaching of content and communication. Content specialists are viewed as people who can teach their students to communicate within their field. Reading and writing specialists are viewed as the people who can help the content specialists recognize the language manipulation necessary to do this.

Along with the development of practical materials, the program is involved with several research studies that support its philosophies. At present, the following seven studies are underway:

1. Study of the Role of Analogies in Content Area Reading
2. Vocabulary Contributions of the Content Fields
3. Vocabulary and Cognitive Development
4. Forms and Qualities of Discourse in Verbs: Implications for Reading and Writing Instruction in Content Fields
5. Reading Instruction Practices in Content Fields
6. Writing Instruction Practices in Content Fields
7. Amount and Types of Language Functions for Major Concepts in Content Fields

Although UNC provides remedial services to those students who need them, the Reading-Writing Program is not involved with remediation. Whereas a remedial program might provide for individualized or small group instruction, diagnostic testing, and basic vocabulary development, the Reading-Writing Program provides for classroom instruction in the content field classes, assesses reading and writing abilities specific to the content field, and deals with discipline-specific vocabulary. While the goal of a remedial program is to bring students up to grade level, the Reading-Writing Program is concerned with guiding students to become mature readers and writers within specific contents. Remedial programs are staffed by reading or writing specialists. The Reading-Writing Program deals with classroom content area teachers.

The Reading-Writing Program in action

The remaining portion of this paper demonstrates how the investigations and interactions of the participants of the Reading-Writing Program have served to meet the assumption that good instruction cannot be separated from the teaching of communication skills.

Three investigations — 1) A survey of the percentages of textbook vocabulary by content field falling into Roget's eight word categories, 2) the discussion of words with multiple meanings by content field, and 3) the examination of sentence and paragraph differences by content field — have led to the development of methods of teaching content and communication. Through modeling and appropriate teaching at each of eight impact areas for instruction, content teachers are able to balance the teaching of communication skills and content.

Vocabulary differences in content field study

We recently took a few textbooks which have a glossary or an index and grouped the words into the eight word categories found in the fourth edition of *Roget's International Thesaurus*. The results of this informal survey startled us. Here are the results of the percentages of vocabulary for each word category (horizontal headings) by content field (vertical headings):

PERCENTAGES OF TEXTBOOK VOCABULARY BY CONTENT FIELD

	Abstract Relations	Space	Physics	Matter	Sensation	Intellect	Volition	Affections
Biology	15	14	5	52	4	2	8	1
Business	35	5	3	3	0	11	40	4
History	8	8	0	8	0	4	54	18
Math	64	14	0	0	1	14	7	1
Physics	38	22	28	2	4	3	2	0

Each content field focuses on different areas of the world and has its own sets of labels.

Mathematics teachers need to know that, unlike other disciplines, the majority of their textbooks' vocabulary (without respect to frequency) involves abstract relations. Science teachers need to see the specific ways the vocabulary of biology differs from the vocabulary of physics. History teachers will find it interesting to learn that their textbooks' vocabulary consists largely of volition and affections. If business teachers were to probe their discipline's vocabulary, they would discover the contributions of political science, history, science, and law.

The vocabulary of the content fields vary, also, in the number of meanings of any one word. The table below contains some words which vary in or among content fields:

WORDS WITH MULTIPLE MEANINGS IN THE CONTENT FIELDS

Science	Mathematics	English	Social Studies
Plain	Yard	Foot	Duty
Colon	Side	Stem	Left
Root	Times	Novel	Class
Boil	Reduce	Article	Ticket
Graft	Mean	Period	Trust

Sentence and paragraph differences in content field study

Vocabulary differences are only one area of language differences among the content fields. While most sentences involve a subject and a verb, the purposes of the sentences in content field material may be any of the following:

To compare
To conclude
To contrast
To define
To direct
To generalize
To judge
To list
To predict
To provide an analogy
To provide transition
To relate whole and parts
To state cause and effect
To state a law or principle
To state a precept
To state a problem-solution

At the same time, while paragraphs usually include a topic sentence and detail sentences, the purposes of the paragraphs may be any of the following:

To analyze
To apply
To argue
To associate
To compare
To contrast
To define
To describe
To differentiate
To discuss
To distinguish
To enumerate
To explain
To identify
To illustrate
To portray
To relate
To review
To summarize
To synthesize

Consciously or unconsciously, textbook authors use sentences, paragraphs, and even graphic aids with a variety of functions to explain the concepts and processes of their content fields.

Students, however, rarely "see" the purposes of sentences and paragraphs or other larger units of writing. Here is an important area where content field teachers can help students read with meaning in the content fields.

Modeling and teaching the language of the content are synonymous

While teachers work with content-specific concepts and processes, they need to share simultaneously many of their insights about the language of their discipline. Ultimately, teaching the language of the content fields involves modeling how to mediate difficult textbook language. Students need to see how their teachers:

1. *Adjust their rates of reading.*
2. *Learn vocabulary.*
3. *Identify how authors organize their ideas and details.*
4. *Apply their background to the author's background.*
5. *Apply their attitudes and values to those of the author.*
6. *Read the same material for different purposes.*
7. *Remember what they read.*

As teachers model these behaviors, they will need to apply them to the specific content of the discipline. For example, mathematics teachers need to help students learn how to use the tools and procedures mathematicians use to *quantify the world*. Mathematics students need to see their teachers applying a variety of solutions for problems, estimating answers, using a slide rule, or proofreading. Social studies teachers who have studied the interactions of people with the environment and other people need to teach students more than vocabulary labels. Students in social studies need to see their teachers gathering data, selecting and using statistical measurements, and reasoning cause-effect relationships.

Eight impact areas for instruction

Both teachers and students have eignt opportunities to use reading effectively:

1. *Beginning the course or unit of study*
2. *Beginning class on a day-to-day basis*
3. *Making reading assignments on a day-to-day basis*
4. *Discussing reading assignments on a day-to-day basis*
5. *Preparing students for quizzes, tests, or examinations*
6. *Returning quizzes, tests, or examinations*
7. *Ending class on a day-to-day basis*
8. *Ending the course or unit of study*

Through appropriate modeling, guiding and teaching at each of these points of instruction, teachers are able to balance the instruction of communication skills and content. The result will be students who are able to function as mature readers and writers in all content fields.

A MULTI-MEDIA TRAINING PROGRAM FOR PRACTITIONERS OF THE SR/SE

Sally Garcia
California State University, Long Beach

In 1971, Frank Christ (5:32) defined learning assistance as a "systems approach to reading and study skills counseling," and in 1972 he established and developed a Learning Assistance Center at California State University, Long Beach. Within its first year of operation, the CSULB Learning Assistance Center had been visited by 3,500 students. In the 1976-1977 academic year, the number of student contacts had increased to 53,000. In order to assess the reading and study skills needs of this large student population, Learning Specialists at CSULB use the *Survey of Reading and Study Efficiency (SR/SE)*, designed by Christ (3).

The *SR/SE* is used to diagnose and prescribe learning skills problems in five areas: (4)

Study Management
Major Course-related Skills
Auxiliary Course Skills
Attitudes, Interests, & Habits
Physiological Aspects

The *SR/SE* requires careful training of skills practitioners. To address this training need, a comprehensive, multi-media program was designed and produced to orient the practitioner regarding the rationale and background of the *SR/SE*. In addition, the program provides training and experiernce in the areas of administration, diagnosis, prescription, and follow-up procedures.

The training program

The training program has five characteristics: it is rigorous, systematic, mathemagenic, cybernetic, and employs media.

The *rigor* of the training unit is predicated on the belief that professionalism requires a commitment to the learner, demonstrated by dedication

to effort as well as to principle. A conscientious utilization of the *SR/SE* demands that the practitioner be an expert if the instrument is to be employed with integrity.

The *systems approach* was selected for the training program because it is potentially both rigorous and consistent. Speagle, of Drexel Institute of Technology, stated that the systems approach in training "produces qualified human resources for the educational enterprise." (17:329)

The training program is based on a systems approach as defined by the Department of Audiovisual Instruction Commission:

> An integrated programed complex of instructional media, machinery, and personnel whose components are structured as a single unit with a schedule of time and sequential phasing. Its purpose is to insure that the components of the organic whole will be available with the proper characteristics at the proper time to contribute to the total system, and in doing to fulfill the goals which have been established. (1:76)

The first step in developing the program was to outline the objectives (6). The criteria was simple: what skills should the Learning Specialist be able to demonstrate upon completion of the training?

The second step in developing the training program was to organize it into sub-categories, then analyze each category to determine which combination of media and personnel would most efficiently and effectively assist in achieving the objectives. The completed program consists of print media, slides, and cassettes, in combination with personnel.

The rationale at CSULB for the *mathemagenic aspects* (15:24) of the training unit is based upon research by Gagné (13:11), who stated that learning involving a response to real objects must utilize those objects at some point in the instruction. Gagné (12:64) also stated that instructional effectiveness is enhanced when the learner is involved in "doing something with his just-acquired knowledge — transforming it, applying it, using it." Davies (7), a commissioner in the U.S. Office of Education, stresses the need to train educators in the use of modern educational technology.

This "hands on" experience is accomplished by assigning a series of sequential tasks, arranged by appropriate modalities: to confer; to read; to view; to listen; to respond; to test. Each task is prefaced in the training manual by a symbol that is used to assign and verify completion of the tasks.

The *"cybernetic,"* or feedback aspect of training is included for two reasons: evaluation and improvement of the training unit, and learner verification and/or clarification.

The rationale for evaluation of the training program, through its cybernetic component, is supported by the writing of Banathy (2:82), who specified that cybernetic data is vital "for the purpose of making adequate adjustments in the system." Devirian specifies the need and rationale for a

cybernetic component within learning assistance programs: "improved data collection, analysis, and subsequent changes within the system are required for improved accountability." (8:52) The feedback necessary for evaluation and change in the training project is accomplished through frequent, informal conferences between the trainer and the trainee.

Learner verification (19:26) is accomplished in the training unit in three ways: 1) conferences with the training director; 2) written responses; and 3) observing the performance of the trainee.

Conferences are specified at regular intervals in the training manual, but are also encouraged on an informal level, whenever needed. The conferences are directed at answering questions that may arise, clarifying aspects of procedure, philosophy, or training that may be unclear, and offering encouragement and perspective for the trainee who might sometimes feel overwhelmed by what is taking place.

One example of written response is the test that follows the reading of the *SR/SE Instructors' and Counselors' Manual* (4). The trainee reads the manual, then responds to questions which test his comprehension of key concepts.

An example of verification through observable performance is the task of entering a profile into the computer terminal. After viewing the slide/cassette unit detailing the task, the trainee views the unit a second time, stopping the program whenever necessary to enter the correct step-by-step procedure on a schematic. The trainee then enters a profile into the computer terminal, using the schematic as a guide. If the computer refuses to accept the entry, or terminates the entry during the process, the situation is examined to determine the cause, on the assumption that there could be an error on the schematic.

A *multi-media approach* was selected for the training unit because it facilitates duplication of those aspects of the training process that remain static. (16:23) The use of slide/cassette media makes it possible to slow down those aspects of the training which would otherwise be too fleeting. Media is also capable of storing and presenting material that is too time-consuming to present each time. (14, 11)

The justification of a multi-media approach is corroborated by Stuck and Mannat (18) in a study comparing the learning of eighteen concepts of law by a traditionally taught group to the learning of the same concepts by a group utilizing an audiovisual-tutorial method. Based on pre-and post-test scores, Stuck and Mannat concluded that the audiovisual-tutorial group showed significant gains over the traditionally taught group. In 1968 Edwards, Williams, and Roderick (10) conducted a study in which they compared the performance of college students learning business machines skills. The control group was taught in the traditional manner and the experimental group was taught in an audiovisual-tutorial laboratory. The results of the final performance test demonstrated that the audiovisual-tutorial group learned significantly more than the control group. A second study was conducted by

Edwards, Williams, and Roderick (10), comparing the typing performance of a traditionally taught group to that of a group taught in an audiovisual-tutorial laboratory. At the end-of-semester performance test, the students who learned typing in the audiovisual-tutorial laboratory significantly outperformed the group which had been trained by traditional methods.

Summary

Professionalism on the part of skills practitioners requires more than the sincere desire to assist students with their learning skills: the practitioner must be rigorously trained to administer, diagnose, prescribe, and follow through with student needs. Such professionalism can be facilitated through a training program which is multi-media, and includes mathemagenic and cybernetic components, and is systematic and rigorous, yet makes allowances for human interaction.

REFERENCES

1. Alphabetical listing of terminology. In D.P. Ely (Ed.) *Audiovisual Communication Review* 11, *1*, Supp. 6. January 1963, 76.
2. Banathy, B.H. *Instructional systems*. Palo Alto, California: Fearon Publishers, 1968, 82.
3. Christ, F.L. *The survey of reading/study efficiency*. Chicago: Science Research Associates, Inc., 1968.
4. Christ, F.L. *The manual for instructors and counselors of reading/study efficiency*. Chicago: Science Research Associates, Inc., 1968.
5. Christ, F.L. Systems for learning assistance: learners, learning facilitators, and learning centers. In F.L. Christ (Ed.) Interdisciplinary aspects of reading instruction *WCRA Proceedings*, 1971, 4, 32-41.
6. Cogan, E.A. Systems analysis and the introduction of educational technology in schools. In S.G. Tickton (Ed.) *To improve learning* (Vol. 2) New York: R.R. Bowker Company, 1971, 25-37.
7. Davies, D. Training personnel for roles in instructional technology. In S.G. Tickton (Ed.) *To improve learning* (Vol. 2) New York: R.R. Bowker Company, 1971, 359-364.
8. Devirian, M. Data collection: a cybernetic aspect of a learning assistance center. In G. Kerstiens (Ed.) Reading update: ideals to reality *WCRA Proceedings*, 1974, 7, 51-58.
9. Devirian, M. Survey of functions of learning programs in California's two- and four-year public colleges and universities. In G. Kerstiens (Ed.) Reading update: ideals to reality *WCRA Proceedings*, 1974, 7, 63-69.
10. Edwards, R.K., Williams, M.L., and Roderick, W.W. An experimental pilot study to explore the use of an audiovisual-tutorial laboratory in the secretarial offerings at the community college level in Michigan. Lansing, Michigan: Lansing Community College, 1968. (ED 027 387)

11. Evans, R.N. et. al. Instructional technology and vocational education. In S.G. Tickton (Ed.) *To improve learning* (Vol. 2) New York: R.R. Bowker Company, 1971, 681-690.
12. Gagné, R.M. Learning theory: educational media, and individualized instruction. In S. G. Tickton (Ed.) *To improve learning* (Vol. 2) New York: R.R. Bowker Company, 1971, 61-74.
13. Gagné, R.M. Media and the learning process. Houston, Texas, 1968. (ED 022 368).
14. Hoban, C.F. Instruction as a systematic approach to instructional technology. In S. G. Tickton (Ed.) *To improve learning* (Vol. 2) New York: R. R. Bowker Company, 1971, 131-138.
15. Rothkopf, E.Z. Learning from written instructional materials: an exploration of the control of inspection behavior by test-like events. *American Educational Research Journal*, November 1966, 3, 241-249.
16. Ryan, K. Teacher training in instructional technology. In S. G. Tickton (Ed.) *To improve learning* (Vol. 2) New York: R. R. Bowker Company, 1971, 375-387.
17. Speagle, R. E. Systems analysis in education. In S. G. Tickton (Ed.) *To improve learning* (Vol. 2) New York: R. R. Bowker Company, 1971, 327-336.
18. Stuck, D. L., and Manatt, R. P. A comparison of audio-tutorial and lecture methods of teaching. *Journal of Educational Research*, 1970, 63, 414-418.
19. Thiagarajan, S. Learner verification and revision: what, who, when, and how? *Audiovisual Instruction*, January 1976, 18-19.

AN ATTEMPT TO TEACH READING AND WRITING SKILLS IN CONJUNCTION WITH A BEGINNING BIOLOGY COURSE FOR MAJORS

Wayne R. Herlin
Brigham Young University

After three years of extensive committee study, discussion, and preparation, Brigham Young University accepted the recommendations of its General Education Council to overhaul general education (G.E.) at BYU, making two sweeping changes: (1) all G.E. would become competency based, allowing and encouraging individual and other non-classroom preparations for competency exams and (2) G.E. would fall into a three-tiered skill structure, at the bottom of which (Category I) would be demonstration of reading, writing, mathematics, and basic health knowledge competencies. The ferment that followed within departments led, among other changes, to probably the first attempt at BYU to integrate content with reading and writing skills. Since G.E. coursework was now secondary to passing competency exams, the College of Biological and Agricultural Sciences ventured into a cooperative biology-language sequence for majors. While learning first semester biology, students were to use biological content as the medium for learning the critical reading and expository writing skills necessary to pass G.E. reading and writing exams. The experiment, though well planned and prepared, lasted for only one semester.

Under university funding, a committee of biology and English teachers outlined what they felt necessary to teach reading and writing in the context of biology. A doctoral student in English, who held a B.A. in one of the biological sciences, was hired to be the executive assistant to the committee and to select and prepare suitable teaching materials. With the committee as consultants, he edited the publication, *Communications for the Biologist: A Rhetoric and Reader*. The rhetoric included 65 pages on how to write, both generally and for biology. The reader included 150 pages of quasi-biological literature, excerpts from such readings as Darwin's *Voyage of the Beagle*, Melville's *The Encantadas*, Thoreau's *Walden*, Fiske's *Through Nature to God*, and Eiseley's *The Invisible Pyramid*. Everything that seemed appropriate to teaching was included — and very well prepared — in a format that should have been a breakthrough in content skills instruction.

What went wrong?

This writer sought an answer to the program's failure separately from key personnel in both areas. Though both areas were cautiously considerate of each other, the biology teachers felt than an instructional system that included separate days and teachers for biology and communications skills soon drove a wedge into the course, effectively dividing areas and killing integrated instruction. Even though each teacher "sat in" on the other's instruction, the courses became separate entities. Then too, Biology felt that English's contribution, consisting of a graduate student teacher, did not match their own effort to provide senior Ph.D. faculty.

On the other hand, English felt that beginning biology students were so naive in their majors (these were mostly first semester freshmen) that they had nothing of substance to write about within their major field.

Other problems plagued the attempt. First, in all textbook and course development the biologists assumed the English teachers would provide reading help. No such help was given. Rather, a common English Department fallacy prevailed: reading is a skill that will grow with undirected exposure only. Reading turned out to be merely exemplary of how to write. How to read was ignored. For example, the first lesson in the rhetoric previewed rhetorical stance, comparing scientific report with aesthetic expression of the same set of observations. The accompanying readings presented Darwin's and Melville's observations of the Galapogas Islands to read as a comparison, and could have capitalized on two types of reading tasks. But the discussion/writing assignments emphasized problems of stance rather than problems of interpretation — a very subtle difference, but devastating to the content reading skill.

A second problem existed in the assumption made by Biology that English teachers *should* provide the reading help. The biologists knew how to read biology, but it never occured to them that they, not the English teachers, were best equipped to teach how to read biology. Writing, to some extent, suffered from the same problem: biologists expected the writing of biology to be taught by the English teacher.

The third problem was encountered in the particular selection of readings within the especially prepared textbook. The readings (1) generally modeled writing skills, but taught neither reading nor biology; (2) displayed only quasi-biology at best rather than the real stuff that biologists and biology students must read in their field; and (3) apparently did not fully satisfy the teaching needs of either the biology teacher or the English teacher. The biological learning had to come from separate sources. No one apparently dealt with these sources (except the students who had to read them) or helped the students learn *how* these sources could be efficiently read; and neither the text, the biology sources, nor the biology experiences produced enough content insight to inspire practical writing assignments. Not even comparative analysis of companion articles such as those of Darwin and Thoreau seemed to inspire critical or analytical comparisons of ideas.

Obviously they were supposed to, but they didn't.

As a fourth problem, a very subtle dynamic in teaching relations seemed to operate in the experiment: no one was in charge. There were a biology teacher and an English teacher, but no competent boss who could or would put the project together in its entirety. To do that, someone needed at least to be sensitive to the teaching/learning needs of biology, reading, and writing. The specialist in biology was there; the specialist in writing was there; a reading specialist was totally missing (remember, English teachers think they know reading because they read). But, in all, the combination did not exist.

The departmental wedge finally succeeded in driving the two teachers apart, and by the end of one semester the high goals of the experiment had failed to the point that a second attempt was not made. The students in the experimental course learned their biology and had some success with their G.E. writing exam, but they were not prepared for the rigors of the critical reading exam at all. Neither instructor had addressed reading problems to any degree.

Was the experiment a failure at BYU? No, because both departments learned a great deal from the experiment. The need to improve reading and writing in content fields still exists, and the Biology Course still is willing to find a way of teaching reading and writing in the context of biology. The project is now, after more than a year of dormancy, being revived with several safeguards to encourage its success.

First, the biologists are now willing to assume responsibility for the reading and writing instruction as well as for content. Thus the biologists themselves have recognized their responsibility for basic communications skills. They also fill the need for "the person in charge." Second, the textbook will become only supplemental to actual biological readings. The English Department, through newly created Reading, Writing, and Study Skills Labs at BYU, will supplement instruction in G.E. foundation skills to prepare biology students to read and write their subject (and other subjects) well. Third, the willingness of biology teachers to assume final teaching responsibility for G.E. reading and writing skills as well as for biology content changes the working assumptions. But the lab teachers will work directly with the biology teachers behind the scenes as well as in a supplemental way with students so that biology teachers themselves will understand and be competent at their new role. And fourth, the English Department's view of reading skills has expanded through the Reading Lab, a place where reading needs at the college level are well understood.

A revived project now has every chance of succeeding where its predecessor failed, of placing reading and writing skills into an integrated content where disintegration once prevailed. With renewed determination key faculty within the College of Biological and Agricultural Sciences and the Learning Services Center (home of the Reading, Writing, and Study Skills Labs) await the chance to "try again."

SUBJECT AREA PARAPROFESSIONALS: A TEAM APPROACH

David R. Hubin and Linda C. Martin
University of California, Irvine

In an effort to provide a comprehensive approach to skills development programming and tutoring in subject areas, the University of California at Irvine has formed subject area teams composed of paraprofessionals. Each of the three teams, representing the broad discipline areas of Social Sciences, Humanities/Fine Arts, and Math/Science, is composed of student staff members selected and trained in one of the following service delivery functions: outreach/follow-up, learning skills counseling, or direct subject area tutoring. A typical team has two counseling assistants, one study skills advisor, and up to a dozen tutors. The population served by this program is all Special Services/Educational Opportunity Program students and consists potentially of 900 students.

The goals of this program include facilitating retention of students through the delivery of comprehensive services, providing a developmental experience for the student paraprofessionals, and benefiting the professional staff by its involvement with a dynamic interaction of highly qualified students.

The primary goal of this program is to facilitate retention and academic success of students by functioning in a preventive intervention manner and providing direct delivery of appropriate services. The program seeks first to identify and contact students who are either experiencing academic difficulty or are performing at a level below their aspirations. This outreach is provided by the Counseling Assistants who, as with all area team members, come from the discipline area of their potential student population and are thoroughly trained in outreach strategies, interviewing skills and counseling approaches. The Counseling Assistants work within their discipline areas to make sure that all eligible students who might benefit from our services are personally invited and encouraged to participate. Moreover, they continue their involvement with the students and, to facilitate effective follow-up, receive progress reports from the other paraprofessionals on the team.

The two other components of the team are called study skills advisors and tutors. The study skills advisors work with students in small groups or on an individual basis to improve reading, test preparation, test taking, notetaking, time management, and writing skills. The third component of the team is the subject area tutor who provides direct course supplementation.

The delivery of these types of services to students is not uncommon today in higher education, since most two and four year colleges provide these services. The choice of an "area team" concept at UCI was based on the belief that the close interaction of individuals working within a common discipline would facilitate the achievement of our goals. With regard to our primary goal of direct delivery of a quality service, our rationale for functioning as a team was that the close interaction of these paraprofessionals, with their different but related services, would enlarge options in programming. For example, the tutors and study skills advisors in the Math/Science area jointly developed a workshop on problem-solving strategies. This workshop is led by a study skills advisor who discusses a general approach to problem solving. The group then splits up into its specific disciplines, e.g., physics, engineering, etc., to apply these strategies to specific problems. Another example of the close interaction of study skills advisors and tutors is in joint appointments with students. A student and both his tutor and study skills advisor will frequently meet together to discuss study concerns. This type of appointment insures that the student will not receive information from one helping source which he cannot incorporate with other help.

The delivery of services is also enhanced by the possibility of smooth referrals among individuals who know and trust each other, and the possibility of realistic formative evaluation and follow-up. For example, a student who has missed several appointments with a tutor will be contacted by a counseling assistant. Often, the student in this situation will provide more candid reasons for this behavior that he might give the tutor himself.

The program goal of providing a meaningful experience for the student paraprofessional is facilitated, we believe, by the team interaction. The different functions of each team component necessitates different emphasis within the training programs. While all area team members possess subject area competence as a prerequisite of employment, they have different outlooks on the services. For example, the study skills advisors become directly involved in learning assistance programming and therefore receive training in learning theory and effective learning strategies. Such training allows them to act as excellent models for their counterparts who are working as tutors.

An additional rationale for the establishment of teams was to try to maximize the effectiveness of administrative efforts. Recruitment, selection and training effectiveness are enhanced by the possibility of joint programming where appropriate. For example, training issues in some areas are common to each service component within the team, e.g., cross cultural issues

in counseling. Training areas that affect all aspects of a team are provided to the entire team both due to efficiency considerations and because these sessions facilitate a good team interaction.

Counseling assistants

The counseling assistant component of the subject area team is responsible for program outreach and follow-up. The selection of the individuals for these positions is based on the applicant's personal qualities as well as his familiarity with a general academic area or discipline.

Training of the counseling assistant focuses on developing a thorough knowledge of the resources and requirements within a discipline area, developing interviewing and counseling skills, and developing a system for follow-up with students.

Study skills advisors

In our efforts to recruit Student Skills Advisors we look specifically for students who will be upper division students with at least one year's experience at UCI as of the fall quarter; who will be able to relate effectively with staff, faculty and students from a variety of ethnic and cultural backgrounds; who will be mature, self-directed and responsible; who will demonstrate ability to learn and subsequently to relate study techniques to course content, and who have a GPA of 3.0 in the major or "area of specialization." The recruitment process is widespread and active.

The selection committee is composed of a member of the Special Services staff, the SSA coordinator, the tutor coordinator and student representatives. The selection process consists of: 1) initial screening of applications to determine that applicants meet minimum academic and class level qualifications, 2) role play exercise where the selection committee rates applicants on a series of interpersonal dimensions, 3) in-depth interviews with selected applicants, and 4) reference checks.

The training component is divided into two parts: 1) an initial 30-hour training period which takes place prior to the beginning of the new academic year and 2) the on-going training which occurs on a weekly basis throughout the school year. The 30-hour component is designed to meet the needs and skill level of the selected candidates. Training includes small group, individual consultation, and individual reading work in the specific skill areas of time management, test taking, test anxiety reduction, note taking, test preparation and study reading. Students are given information about basic skills as a total group and then divided into teams to work with appropriate resource material and in consultation with Learning Skills Center staff members to adapt those basic skills for use in specific academic disciplines. Students are given the opportunity to practice presenting their material in the total group situation, using feedback to suggest additions and deletions

and changes in delivery style. In addition to basic skills instruction, training includes components on what it means to be a helper, cross-cultural learning issues, cognitive style, and program development and evaluation procedures.

Additional training conducted during regular weekly staff meetings includes sessions on conducting an initial interview, how to use a study skill assessment instrument, confidentiality, referral and how to conduct a drop-in interview.

Study skills advisors currently:

1. Provide learning skills support to students on specific academic disciplines through:
   a. delivery of small focus groups and
   b. individual consultation with students.
2. Work with Learning Skills Center staff to develop learning skills support programs in specific academic disciplines.
3. Be available to guide students working with self paced materials in the Learning Skills Center laboratory.
4. Engage in supervised training activities.
5. Provide appropriate follow-up with students who have participated in SSA programs.
6. Be responsible for program publicity.
7. Be responsible for outreach to potential student users.
8. Engage in on-going evaluation of their own service delivery.
9. Engage in on-going evaluation of the total team approach to service delivery and development of strategies for working together as a cohesive team.

The evaluation of the study skills advisors' component is an on-going and quarterly process which utilizes information from five different sources. Student users provide written feedback regarding the quality of the services received from the study skills advisors. The study skills advisors also evaluate in writing their own performance and the quality of the services they have delivered. In addition, the study skills advisors provide written feedback to their supervisor regarding the effectiveness of the training and supervision they have received. Supervisory staff meetings provide an opportunity for the supervisor to assess the study skills advisor's ability to conceptualize and relate to the students whom they are advising. Finally, the supervisor actively seeks feedback from other staff members who work with the study skills advisors.

Tutors

The qualifications to become a subject area tutor are basically that a prospective tutor be an upper division student with a grade average of 3.0 both overall and in his major and that each candidate earned at least a "B" in

any course in which he wishes to tutor. Moreover the candidate must have a written recommendation from a professor in that discipline. Other specific traits sought in a tutor candidate include a willingness to participate in a team approach that requires extensive training and significant written follow-up.

To facilitate the early development of a team approach to the delivery of subject area supplementation and study skills counseling, the selection process is based on a team concept. The tutors are not recruited until other paraprofessional, including peer study skills advisors, have been hired. Selection committees are then formed for each of the general subject areas and these committees participate in the recruitment and selection of tutors. The purpose of this approach is to allow the paraprofessional subject area team members who will be making referral to tutors to have confidence from the outset in the candidates chosen as tutors. The task of recruiting the tutorial component involves the team with academic counselors, advisors and professors and provides an early experience of working together. The decision to recruit tutors after the other segments of the team also reflects the fact that tutors, due to their more specialized function often tend toward a more peripheral involvement on the program.

Tutor training is divided into two segments in addition to a procedural orientation. The first part of tutor training is directed at general concerns in tutoring. All tutors, regardless of discipline, are trained together in the following areas: 1) interviewing skills necessary for the first tutoring session; 2) facilitating student independence through teaching general problem solving strategies; and 3) cross cultural concerns that might affect tutoring. The other aspect of training is subject area specific and is pursued in what we call subject area meetings. These subject area meetings often are held jointly for study skills advisors and tutors and are task oriented, e.g. the development of a Math Science workshop of "Problem Solving."

The evaluation of the tutorial component utilizes four basic instruments. The student evaluates both the program in general and his specific tutor. The tutor, in turn, evaluates the student and the program in general. The information gained on these instruments is primarily oriented around user satisfaction and seeks suggestions for program or personnel improvement. However, these instruments also attempt to gather information regarding attitudinal changes and changes in a tutee's image of himself as a student in a particular course or discipline. These questions are asked both as a student enters and as he leaves the program. Part of the rationale for these attitudinal/self image questions is that it is very difficult to obtain hard data relating grade change to the number of hours tutored. While preliminary evidence indicates that tutoring definitely has a positive effect on grade performance, the multitude of variables make it difficult to provide hard data. It therefore becomes significant to measure attitudinal changes to obtain quantifiable data in program effectiveness.

Program evaluation

In addition to the service delivery evaluation which is conducted internally by each of the three components, an overall evaluation of the paraprofessional team approach includes: 1) on-going assessment of overall academic progress of both student users and student staff members; 2) assessment of the training programs for each component; 3) assessment of the impact of the team approach on program offerings and on staff members.

Assessment of academic progress includes comparison of grades and retention rates of program participants against the campus norms and informal but continuous interaction with students to assess their attitudes toward the campus and toward their academic work. The evaluation of the training is conducted both on an informal on-going basis and a more formalized quarterly basis, utilizing self-reports of student staff, input from all appropriate professional staff with contributions from the evaluations of the student users also suggesting directions for future training. We are noticing several kinds of impact on our total program. Utilizing subject-area experts has brought more breadth and subject-area expertise to the Center. The availability of this broad-based expertise allows for increased programming options. It has also provided the impetus and creativity for increased materials development. Finally, we find that there is increased interaction between professional staff members, paraprofessional staff members and between the two groups. This increased interaction of all staff members is building trust and credibility between all staff members — a fact which improves both the quality of our working relations and of the service delivered to the students.

READING FOR SURVIVAL OR HOW TO TEACH YOUR STUDENTS TO FUNCTION IN SOCIETY

Bobby M. James
South Plains College

In September 1971, the United States Office of Education funded what is now known as the Adult Performance Level Project (APL). The project was charged with two specific objectives. The first was to define adult literacy in terms of actual competencies performed in everyday life tasks. For too long literacy has been defined as the ability to read and write or to read on a certain grade level. Such definitions said nothing about an individual's ability to cope with the activities encountered in daily living.

The second task assigned to the APL project was to assess these competencies for the adult (18-65 years) population of the continental United States. Surveys demonstrated that there are shockingly large numbers of adults in the population who function with difficulty. Results show that approximately 20% of the adults in the nation function with difficulty, or in other words, cannot function successfully with minimal survival and life coping skills. Still other persons are functional but not proficient in performing everyday life tasks. In terms of numbers, then, we are talking about 20 to 50 million people.

The educational institution's responsibility

Inherent in the purpose of junior and senior colleges is the task of providing the necessary educational experiences (opportunities) required by our graduates in order for them to function in society. We are finding that one of the most important and challenging jobs that we as post-secondary educators are facing is teaching our students how to get along in this world — how to survive (in terms of "academic" survival and life survival skills). This challenge is even greater because of the open-door admissions policy under which so many colleges are now operating. Because of this policy, we are

getting students that simply cannot "make it" in our society — even though they may have the necessary academic skills to get a degree.

This paper is not intended to place blame for the deficiencies in life survival skills of our students, but rather it is intended to highlight some areas of instruction that can aid in the remediation of this problem. The need for this type of instruction is here, whether we like it or not; and the need will probably continue to grow. If we are going to be held accountable for the quality of education in our institutions, then we must attempt to offer courses that will enable our students to function proficiently in society.

The approach at South Plains College

The attempt by South Plains College to provide instruction in the area of life survival skills is only in the formative stages. Instruction was initiated in Fall 1977 in a college reading skills class. Therefore, this is *not* a consumer education class. It is a thematic reading class emphasizing consumer survival.

Since reading is the basic life survival skill, the most appropriate avenue from which to approach the subject is through reading. All consumer survival skills are based on one's ability to perform the basic reading skills; and when the course content of college developmental reading skills classes is examined, it is a comparatively simple matter to correlate it with basic life survival skills topics. Therefore, the remainder of this paper will be dealing with these survival skills and their correlation to reading skills as they are taught in the College Reading Skills class at South Plains College.

Reading for main ideas

Of paramount importance to all readers (consumers) is the ability to read a piece of material and comprehend the main ideas. As far as life survival skills topics are concerned, any topic could be easily correlated to reading for main ideas. However, the topics chosen for use in this program were articles and paragraphs discussing basic rights under the law, how laws are made, and equal credit opportunities.

In order to facilitate feedback to the student concerning understanding and proficiency of both the reading skill and the survival topic, exercises were devised which tested the students ability to correctly pick main ideas from the material dealing with survival topics. In other words, we are not testing simple recall of the material, but rather the student's ability to *use* the reading skill about which he has just learned.

An example of this is having the student read a paragraph dealing with basic rights under the law. Following the reading of this, the student is asked to pick from a group of statements the best main idea for what he has read and the statements which are too general, too specific, or irrelevant to the main idea. By doing this, the student not only learns how to pick main ideas; but he also thoroughly dissects the survival skill paragraph until understanding of the material is achieved.

The principle of evaluating for applicable knowledge rather than pure factual recall is carried throughout all the exercises. In the opinion of this writer, it is of little value for the students to show that they can remember what was read. What is of value is the student's ability to *apply* what was read.

Reading to identify supporting details

One area above many others that requires the consumer to read for details is the reading of insurance policies. This is often a frustrating experience for proficient readers so it is easy to understand how difficult it is for marginal readers. In developing exercises to illustrate the techniques of reading for details, excerpts from actual insurance policies were used. The exercises were based on involving the student in the identification of important details contained in the policies. Additionally, articles were used which describe various kinds of insurance that the consumer will probably be asked to purchase. The student is also asked to identify important details found in those articles.

Other examples of materials that can be correlated with detailed reading are loan disclosure documents and employment contracts. Exercises can be developed that are similar to those used for insurance policies that will stress application of the techniques of identifying important details rather than simple recall of the material read.

Skimming and scanning

Skimming and scanning are two reading skills that consumers are constantly required to use. For the person whose life survival skills are less than adequate, the need to use these skills may be a frustrating experience. The exercises that have been developed illustrating scanning involve having the student pick exact information from telephone books — including the yellow pages — dictionaries, and classified advertisements and then answer questions based on the information they found. For example, the student is asked to find the advertisement in the classified ads for a particular job. Based on what they found, they are asked to answer these questions: 1) What are the qualifications for the job? 2) How much does it pay? 3) Would you have to move to a different city in order to get the job?

The technique of skimming is illustrated by having the students skim consumer-related articles in order to pick main ideas. These articles deal with topics such as computer driver tests, wise grocery shopping, and matching personal characteristics with job characteristics. Upon completion of the skimming, thorough reading of the articles is required.

Following written directions

The correlation of life survival skills to the reading skill of following written directions was simple. Some directions — like medicine labels — can

mean the difference between life or death, and our ability to apply those directions is literally a life surviving skill.

Correlating life survival skills to this reading skill also affords us the opportunity to delve into less dramatic areas, but none the less important activities. Those that we have emphasized, in addition to reading medicine labels, are writing personal checks, balancing check books, making bank deposits, and completing job applications.

In keeping with the philosophy of stressing applicable knowledge rather than factual recall, the exercises for this section are intended to allow the student to learn how to perform the survival skills discussed. For instance, a blank check along with directions for the completion of it are given to each student. The student is asked to complete the check by following the directions. Another example is completing job applications. Several different types of job applications are provided which the student is asked to complete just as if they were applying for the job.

Reading maps, graphs, and charts

The final reading skill that is used in this program is reading maps, graphs, and charts. The skills discussed are reading mass transportation schedules, reading city and road maps, and reading graphs describing several topics pertinent to consumer awareness of various economic conditions.

The exercises are of the usual type whereby the students are asked questions which, when correctly answered, indicate a proficiency in both the reading and survival skill. Examples of these are reading a city bus schedule and then answering questions concerning which bus should be taken to get from one place to another, or reading a road map and charting the shortest route from one point to another.

Summary

The intent of this paper has been to emphasize the critical importance of incorporating life survival skills into college developmental reading curricula. Our country has 20 to 50 million people who cannot function adequately in society because of deficiencies in their survival skills, and it has become the obligation of post-secondary educational institutions to provide educational opportunities which will assist individuals in becoming better equipped to function in society.

This paper has, at best, provided a very brief description of the correlation of life survival skills to reading skills and the types of exercises that can be used to provide feedback to students concerning their progress. This writer is confident that there are countless other reading and survival skills that can be employed in this type of instruction. However, the author is equally confident that the examples cited in this paper are sufficient in that they illustrate what can be done to aid students in this area.

Feedback from students who have completed the units has been en-

couraging. Of particular encouragement are the comments concerning the applied knowledge exercises. This writer think this approach will be the key to the future of this instruction. When students can see the usefulness of learning reading skills, the job of teaching those skills is also much easier.

In conclusion, it must again be pointed out that this instruction is only in the initial stages. Many additions and refinements are necessary, but this is a first step toward meeting an educational need that is here and growing. Ideally, this instruction should not be necessary on the college level, but it is. This is one attempt to satisfy it.

REFERENCES

1. *The adult performance level competency-based high school diploma program*. Unpublished Research Report. Texas Department of Human Resources, 1977.

A SUBJECT AREA SPECIFIC APPROACH TO TEACHING CRITICAL THINKING

Linda Martin
University of California, Irvine

Over the years there have been a variety of efforts by educators to improve students' thinking through education. Various approaches have included courses in formal logic on the college level; teaching of a formal discipline, such as Latin and Greek in college and secondary school; teaching a formula or "steps" in thinking; teaching of science as a way to improve thinking; introducing students to the mental processes of great thinkers and hoping for transfer and, fairly recently, encouraging free self-expression as a method of learning to think. In spite of these efforts, however, the college learning assistance practitioners are confronted daily with adult learners who have not yet developed what we call, perhaps ambiguously, "critical thinking" skills.

In an effort to address the needs of students in our four-year state university, we are moving in the direction of providing learning skills assistance on a subject-area specific basis. There are five major reasons for our movement in this direction:

1. As previously mentioned, critical thinking is not necessarily produced through formal exercises in so-called intellectual subjects nor through exposure to excellent thinking by others.

2. Different academic subject areas and life activities seem to define thinking differently and, in fact, require persons to engage in different intellectual skills — i.e., mathematics and language arts tend to require thinkers to work from the general to the particular, or engage in deductive reasoning, while the sciences and social sciences often require the thinker to move from the particular case to the general, or to engage in inductive reasoning. Problem solving revolves around the development and elaboration of hypotheses. Social, ethical and moral problems require exchange of views, use of tentative conclusions, and often attempts to generate group consensus.

3. Research has shown (3, 6, 7) that persons often develop a "cognitive style" which both influences and is influenced by the way they receive and

process information. Some academic tasks require systematic problem solving strategies, while others require a more creative or intuitive approach. It is our contention that persons in certain academic areas prefer and find it most effective to operate in one cognitive style.

4. Persons who are expert thinkers in their subject area tend to have more credibility in the eyes of the learner than do persons from other disciplines. For example, a study skills advisor who has demonstrated ability to think critically in mathematics has more credibility with the learner than does a social scientist who is also attempting to teach that student to think critically in math.

5. Students learning to recognize and engage in the thinking processes required by the subject area in which they are working will find the skills-learning experience to be more immediately relevant and meaningful, two important factors in motivation.

Educators and psychologists have offered us many different definitions of "thinking" and of "critical thinking." The terms are often used interchangeably with one another and with "remembering," "imagining," "believing," "reflective thinking" and "problem solving." Using the subject area specific approach allows us to define critical thinking in light of the tasks or intellectual process required by one who is a practitioner in that discipline. Thus it is, that for purposes of our approach, I use Thomas Aylesworth and Gerald Reagan's definition of critical thinking as the "mental skill of solving problems in the manner of the practitioner" in a specific discipline. Underlying this definition and our approach are two basic assumptions:

1. *Critical thinking is subject-area specific.*

2. *Critical thinking is a complex method of problem solving which includes a series of steps, each of which involves specific cognitive or intellectual skills.* For example, the basic ability to recognize and define a problem requires the student to (a) be able to ask relevant questions; (b) see relationships; and (c) have the vocabulary with which to state the problem. The ability to formulate hypotheses requires the student to know how to use reference material, take notes, read, interview resource people, select relevant and irrelevant material, see relationships and ideas, and see weaknesses and strengths.

In addition to developing cognitive skills, which are based on facts and are logically correct, we would also like to influence students to become thinkers who make honest use of the skills they possess. Burton, Kimball and Wing (2) have delineated ten attitudes which are favorable to cognitive thinking. These are intellectual curiosity, intellectual honesty, objectivity, intellectual skepticism, open-mindedness, conviction of cause and effective relationship, disposition to be systematic, flexibility, persistence, and decisiveness.

Because our approach to teaching critical thinking is to work with particular academic disciplines to develop *specific* skills, we find ourselves employing a number of methods to teach critical thinking or its component

parts. Staff who are experts in their academic disciplines (i.e., "practitioners") work as appropriate, given administrative and budget constraints, with individual students to determine the students' current skill level and to develop those skills which are least developed. They work with developing basic abilities (i.e., defining problems, formulating hypotheses, collecting, selecting, or recalling relevant data, etc.) and/or with formation of attitudes favorable to critical thinking (i.e., intellectual curiosity, flexibility, being systematic, etc.). Four often used methods are:

1. Teaching questioning skills by helping students recognize various thinking processes which are required by their discipline and then using those processes to ask questions which call for information recall, translation, interpretation, application, analysis, synthesis or evaluation.

2. Teaching mapping skills by facilitating growth of skills of seeing relationships and/or selecting relevant data.

3. Teaching students to break up tasks into small steps such as solving math problems with a step-by-step systematic approach.

4. Counseling with students regarding attitude change by showing the importance of active involvement, flexibility, open-mindedness, and intellectual curiosity.

We encourage our staff both to teach the desired skills directly and to model the desired behavior or attitude. We provide role models who do not accept "brushoff" answers and who demonstrate curiosity.

Our approach is new to us — it is in fact very much in the hypothesis formulation stages. Initial feedback from students and faculty in the form of self-report and grade changes is positive; however, it is our next task to verify our hypothesis regarding critical thinking by systematically gathering objective data and evaluating it — in other words to persevere and think critically!

REFERENCES

1. Alyesworth, T.G. and Reagon, G.M. *Teaching for thinking*. New York, Doubleday, 1969.
2. Burton, W.H., Kimball, R.B. and Wing, R.L. *Education for effective thinking*. New York, Appleton-Century-Crofts, 1960.
3. Fenton, J.D. Cognitive learning style and the brain: some implications for education, paper presented at the Tenth Annual Western College Reading Association Conference, Denver, March 1977.
4. Martin, L. and Tomlinson, B. Teaching students to formulate questions, paper presented at the Tenth Annual Western College Reading Association Conference. Denver, March 1977.
5. Mayer, R.E. *Thinking and problem solving*. Palo Alto, Scott, Foresman & Co., 1977.
6. Nelson, K. Contemporary models of cognitive style: an introduction, paper

presented at the Convention of the American College Personnel Association, March 1975.
7. Nelson, K. Introduction of an information processing model of cognitive st..., paper prepared for private circulation, October, 1974.

A WORKABLE COLLEGE READING DIAGNOSTIC SERVICE

Sandra Schulman
Los Angeles Pierce College

It is generally agreed that reading level and academic success are closely linked, so that students can be helped to head off frustration and failure by knowing their reading level and by being referred for appropriate help according to the level of their deficiencies, if any exist.

In the Pierce College Reading-Tutorial Center we have developed a diagnostic testing procedure that seems to be working effectively. We offer a reading diagnostic service to all students enrolled in the school. The test is voluntary. The testing, scoring, and interpretations are confidential and the whole procedure takes about 30 minutes. The service is offered in two ways:

1. The student is encouraged to come to the Reading-Tutorial Center on his own during our hours of operation.
2. An instructor of any subject requests that a Reading Center staff member come to his classroom and administer the test to the class as a group.

The test used is the comprehension section of the *Gates-MacGinitie Reading Test*, Form F1. The percentiles are based on 12.8 grade norms. It takes 25 minutes to administer and approximately 5 minutes to score and interpret. It is administered by a member of the Reading Center staff (the language-skills instruction assistant or an instructor). When given on an individual basis, it is scored immediately using a Scantron machine. When administered to a class, the tests are taken back to the Center for scoring and then returned to the class at the next class meeting.

Announcements and flyers are distributed schoolwide to make the students and instructors aware of the testing service. In addition, the counseling office at Pierce College, which has initiated a student orientation program for all entering freshmen, includes information on the diagnostic testing service in its orientation session and urges the utilization of this service by the students.

An information sheet in the form of questions and answers explains the test to the students. Such questions as the following are included:

1. Why should I take the test?
2. How long will it take?
3. When will I know the results?
4. Will an official record be kept of my score?
5. Will I be forced to take a reading class if my score is low in this test?
6. Does a low score mean I should not enroll in college classes?

A special form was developed to give the score, interpretation of the score, and course recommendation to the student. There is, in addition, a list and explanation of the courses and services available in our Reading-Tutorial Program.

Cooperation and evidences of appreciation from the faculty and various student services have been gratifying. The EOPS director requires all EOPS students to visit the Reading Center and become aware of the services. A number of instructors require that each of their students come to the Center and take the test as a regular class assignment.

This semester we have had requests for, and have tested, thirty-four classes as groups, although this is the first semester in which we have offered the in-class testing.

The Physics and Industrial Education Department chairpersons have made recommendations to their departments to mandate a reading test for all students in these two disciplines. A number of other chairpersons not only support our testing service but have submitted all their textbooks currently in use or under consideration for adoption for a readability survey (another service we began this year). Instructors in academic as well as vocational areas such as English, chemistry, geography, anthropology, political science, and metallurgy have advised students with low scores to drop these courses, take the reading course, build up their reading skills, re-enroll the following semester *or* get concurrent reading help.

Between August 1976, when we began testing on a very small scale, to October 31, 1977, we have tested 1,594 students. Of those students, we referred 227 to individual basic skills or tutorial help. They were the students whose scores ranged from zero percentile to tenth percentile. We referred 421 students to the reading clinic. They were the students whose scores were tenth to thirty-eighth percentile. We found 995 students with no significant reading problem. These students were advised to enroll in a power reading class if they wished.

Data gathered so far indicates the following:

1. About 40 percent of the students tested showed reading deficiencies and were referred to the reading clinic, basic skills lab or tutorial program.
2. At least *half* of these followed the recommendations and enrolled in the courses or programs suggested to them.

3. Follow-up scores in reading revealed improvements in at least half of the students who received tutorial and/or course help.
4. Evaluation studies to date reveal improvements in the following areas in up to 75 percent of the students who stayed with the program:
    a. retention in classes
    b. attendance
    c. study habits
    d. self-confidence
    e. grades in courses

There are indications that the resistance to diagnosis and prescription in the area of reading skills is disappearing as the realization of the ultimate benefits to the student and the school's academic program becomes apparent to students and staff.

Additional information, data and materials may be obtained by contacting Sandra Schulman at Los Angeles Pierce College.

REFERENCES

1. Beausay, W.J., Editor, *Outlines and readings in educational tests and measurements*. New York: MSS Information Corporation, 1972.
2. Berdie, R.F., *Counseling and the use of tests*. Minneapolis: Student Counseling Bureau, University of Minnesota, 1962.
3. Fagan, W.T. and others, *Measures for research and evaluation in the English language arts*, Eric Clearinghouse on Reading and Communication Skills, Urbana, Illinois, 1975.
4. Griffin, M. and others, *Guide to clinical evaluation instruments in reading*. Indiana University, Bloomington, Eric Clearingbone on Reading, 1972.
5. Hoffman, M.N.H., *The measurement of bilingual background*. New York: Bureau of Publications, Teachers' College, Columbia University, AMS Press, 1972.
6. Jackson, M.S., *Reading disability*. Sydney: Angus and Robertson, 1972.
7. Jansky, J.J. and de Hersch, H. *Preventing reading failure – prediction, diagnosis and intervention*. New York: Harper and Row, 1972.
8. Leibert, R.E., Editor, *Diagnostic viewpoints on reading*. Newark: Delaware Press, 1971.
9. McLaughlin, K.F. *Interpretations of test results*, Washington D.C.: U.S. Department of Health Education and Welfare, Government Publications Office, 1964.
10. Mehrens, W.A. and Lehmann, I. *Standardized tests in education*. New York: Holt Rinehart and Winston, 1969.
11. Miller, D.M. *Interpreting test scores*. New York: Wiley Press, 1972.
12. Miller, W.H., *Reading diagnosis kit*. New York: The Center for Applied Research in Education, Inc., 1974.
13. Potter, T.C. and Rae, G. *Informal reading diagnosis*, Englewood Cliffs: Prentice Hall, 1973.

14. Roswell, F.G. and Natchey, G. *Reading disability, diagnosis and treatment*, second edition. New York: Basic Books, 1971.
15. Roueche, J.E. and Snow, J.J. *Overcoming learning problems*, Jossey-Bass Publications. San Francisco: Washington, London, 1977.
16. Schwartz, B. *About community college remedial and developmental education*, Eric Clearinghouse for Junior Colleges, Los Angeles, 1977.
17. Tyler, R.W. and Wolf, R.M. *Crucial issues in testing*. Berkeley: McCutchan Publishing Corporation, 1974.

HOW TO BUILD A BASIC SKILLS PROGRAM FOR A NON TRADITIONAL COLLEGE — AND LIVE TO TELL IT

Ann MacDonald-Turl and Marla McClurg-Lonero
Peralta College for Non-Traditional Study

In 1974, the Peralta Community College District was faced with a predicament. The problem was how to provide educational services in an area of the District that was experiencing declining enrollment and where there were neither site nor funds available for the creation of a full-scale college. The only viable solution was a program that would diversify District programs and services thereby attracting more and different student populations while at the same time consolidating overhead and operating efficiency. Peralta College for Non-Traditional Study is such a program. (2) Peralta College for Non-Traditional Study (PCNS) is the fifth and newest college to be established by the Peralta Community College District Board. The college is intended to provide alternative educational resources in the district, thereby increasing access to learning for district residents. During the first four years of its existence, the college has provided outreach classes in various locations, in cooperative planning with business and other agencies. The college has established courses in over 80 locations in an effort to meet the immediate educational needs of various constituencies. However, it was not intended that PCNS be non-traditional in the sense of location of services, although that feature has frequently resulted in the servicing of non-traditional students.

What is "non-traditional?" The first comprehensive attempt to examine this movement was made by the Commission on Non-Traditional Study, established in 1971 under the College Entrance Examination Board and the Educational Testing Service. That Commission defined non-traditional study as more "an attitude than a system," which "puts the student first and the institution second, concentrates more on the former's need than the latter's convenience, encourages diversity of individual opportunity rather than uniform prescription, and de-emphasizes time, space, and even course requirements in favor of competence and, where applicable, performance. It has concern for the learner of any age and circumstance, for the degree

aspirant as well as the person who finds sufficient reward in enriching life through constant, periodic or occasional study." (1)

The Center for Research and Development in Higher Education subsequently decided to throw out the term "non-traditional study" because of its many interpretations. They chose instead the term "extended degree programs" defined as those programs, "with policies and procedures that enhance their convenience and appeal and with content of interest to students who are usually beyond what has been considered the conventional college age." (3) Non-traditional programs have arisen in response to a complex array of social forces, among them the drive for equal opportunity, the trend toward life-long learning, the desire for more "relevant" learning, and the economic problems of academic institutions which have led them to seek new student constituencies and new ways to use resources effectively. Such a complex of causes is bound to produce a variety of effects ill-suited to categorization.

There are points of contrast that do not appear in either of the definitions cited above, perhaps because these components are not always present. For example, the non-traditional institution tends to emphasize the use of existing resources rather than building of large new campus complexes. Some non-traditional institutions are so termed merely because they serve non-traditional students: perhaps teaching old things in new ways to new populations. A truly innovative institution will attempt to modify all three facets — content, method and audience — as appropriate. It may well be that in some cases the simplest modification — for example, place of location — can open up appropriate traditional content to a new audience. On the other hand, retention of traditional structures, but with newly tailored content, can bring a fresh appeal and hence a significant change in student constituency.

The key, then, is for the non-traditional institution to have sufficient flexibility so that it can be responsive to a variety of needs in effective ways.

Basic skills program

It is the intention of this section to give a synoptic view of the formative stages of the Basic Skills Program of PCNS.

The fundamental goal of the Basic Skills Program is to raise the reading rate of the students the program serves. Since there were only a few students in a scattering of basic skills courses at PCNS it became necessary to:

1. increase the number of students served by PCNS
2. identify the students who needed the services of a Basic Skills Program
3. recruit the identified students into the program
4. keep students involved in the Basic Skills Program in a way that made sense to them
5. encourage students to use their education for further self-development

The approaches used to actualize the program goals were based on the premise that to recruit students who have traditionally been turned off to school there had to be a real reason, a payoff, for them to return. Adults who want to pass an academic test for entry-level jobs or for higher job placement constitute such a group. Oakland has a very high unemployment rate and has been identified as a target area for CETA (Comprehensive Employment Training Act) funds. Most vocational skills training offered at CETA lasts from three to twelve months; the students are paid a stipend while receiving training and there is 75% and above job placement at the end of the training period. For long-term unemployed, the stipend training and job placement are the last resort.

The Oakland CETA office serves adults who are seeking this entry-level skills training. The CETA office provides from two to four orientation sessions daily, during which the particulars of becoming CETA-eligible are explained. Area residence, long-term unemployment and passing the Basic Occupational Literacy Test (BOLT) are some of the criteria that must be met. The BOLT tests academic skills between the seventh and twelfth grade levels. There is a steady stream of approximately 300 adults per week going through the CETA office who are damned by this test; approximately 60% of the people taking the test fail it.

After it was discovered that a high percentage of people taking the BOLT test were failing, the PCNS Basic Skills Program committed itself to providing services to help adults pass it. However, getting the "word" out about the classes without invading the precarious privacy of these individuals or upsetting the CETA office's orientation procedure meant the development of a tenacious but low-keyed recruitment process.

The coordinator of the Basic Skills Program began attending the hour-long CETA orientations to recruit students. At the end of each orientation session, a brief explanation of the PCNS' program was given and pre-enrollment forms were distributed, with 80% to 90% of the people signing up for the program. When a PCNS recruiter was not in attendance, the pre-enrollment rate dropped to approximately 5% a week or 5 pre-enrollment forms. The CETA staff informs the applicants of the services available through PCNS, but not with the same fervor as a Basic Skills coordinator. On the basis of this recruitment process, five classes were established in the community. Class locations were selected on the basis of availability and proximity to a bus route in areas and institutions that would not be intimidating to the students. Neighborhood libraries met these criteria.

Also, the Oakland National Guard is recruiting youth from the Oakland area and providing them with military/vocational training. It is hoped that at the termination of the training these young people will be prepared to enter the job market. PCNS is providing the educational component for the Guard's program.

Program design

All students entering our open entry/open exit program go through the same basic steps: testing, evaluation and grouping; group instruction; and post testing and referral.

Tutors

Our tutors are trained by a sister college in the developmental skills of reading and writing. All are trained in the skills to be taught, and the necessary materials and processes by which to teach the skills. In addition to academic training, each tutor must possess personal qualities; that is, they must be cognizant of and sympathetic to the sociological and psychological needs of non-traditional students with minimal basic skills.

Instructors

The instructor's responsibilities are many. They must administer and evaluate a battery of tests to each incoming student; group students; write lesson plans for each tutor and his group; observe, criticize and supervise each tutor; conduct weekly tutor seminars; select and maintain appropriate materials and equipment; collect data; and finally, post test and counsel students.

Proposed program

After trying to transfer the contents of our traditional reading program to the CETA applicants and the National Guard Program, we learned that these were very different students with definite goals in mind. The CETA applicants simply want their skills improved enough to pass the BOLT test; the National Guards have no choice but to take the Basic Skills course as their pre-basic training. Consequently, the traditional "credit" system isn't applicable. For these reasons, the participants of the program feel that changes must be made to broaden the scope of the program to include: 1) reading and writing skills, 2) real life adult competency skills, 3) the development of habits for pleasure reading.

Another issue arose because of the numerous community-based sites. Since the course is not taught at one central location, learning labs including hardware and software must be established at each site. This means a major expenditure. However, because the sites are usually provided by other community organizations, eliminating overhead costs for the college, we feel that such expenditures are justified. In addition, some of the programs, such as the Oakland National Guard, are willing to provide some funds for the establishment of such learning labs.

The final change which must be made is the development of a thorough

records-keeping system. This will require the hiring of a person whose sole responsibility is the maintenance of records for each student. This responsibility will be: pre and post test scores, the test scores of the CETA BOLT Test or the National Guard's Test, and follow-up information to determine the success of each individual in his goal as correlated to the success of that individual in our program.

There are undoubtedly other problems which will arise, but with an attitude of flexibility and cooperation with the community organizations, we feel that such problems can only lead to a better program. The most exciting stimulus for us is that because we are in the community and have the assistance of other organizations, we hope that the transition from adult life to "the classroom" will be easier and more meaningful to the students.

REFERENCES

1. Commission on non-traditional study. *Diversity by design*, Jossey-Bass, 1973.
2. Fryer, T. *Peralta's presence in the north: a viable alternative*, Unpublished Report, Peralta Community College District.
3. Medsker, L., Edelstein, S., Kreplin, H., Ruyle, J. and Shea, J. *Extending opportunities for a college degree: practices, problems and potentials*, Center for Research & Development in Higher Education, University of California, Berkeley, 1975.
4. Tapper, N. *Planning document*, Unpublished report, Peralta College for Non-traditional Study, 1976.

LEARNING ASSISTANCE FOR INMATES IN A FEDERAL CORRECTIONAL INSTITUTION

Donna Wood
State Technical Institute at Memphis

The magnitude of the need for correctional education is overwhelming in view of the fact that between 20 and 50 percent of the half-million adults incarcerated in American federal and state prisons cannot read or write. In many institutions, approximately 50 percent of those over 18 years of age have an eighth grade education and in some facilities for youthful offenders, as many as 80 percent are illiterate (4).

The problems of correctional education are further compounded when one considers that the goals of corrections and education are not always compatible. The primary goal of corrections is custody and management of those incarcerated while the essential goals of education include growth, freedom, and self-actualization (4).

This paper describes an educational program at the Federal Correctional Institute at Memphis, Tennessee.

Description of the programs

During the Summer and Fall Quarters 1977, the State Technical Institute at Memphis (STIM) entered a contract to provide a variety of educational programs at the nearby Federal Correctional Institution (FCI). This facility, considered a minimum security prison, had been completed in the Spring of 1977 and had an inmate population of about three hundred and fifty. Three principal types of programs were offered under the contractual agreement: ABE, GED preparation, and courses leading to an Associate of Applied Science Degree from STIM. Classes were held in an Education Building within the prison complex. Students at FCI-Memphis are typical of inmates in most federal and state correctional institutions; over half are school dropouts and have an average educational level of ninth grade.

Inmates interested in participating in the educational program were interviewed by personnel in the Education Department at the prison. Selec-

tion of inmates for the ABE and GED classes was based on Stanford Achievement Test scores, the Revised Beta Intelligence Test, and the personal interview. Depending on his work schedule, each student was assigned to a morning, afternoon, or night class.

Within the guidelines of the Federal Bureau of Prisons' Policy Statement on Education, the ABE and GED classes were designed as self-paced and individualized with the class size limited to fifteen students. Aides, inmates with some college background assigned to work in the program, set up audio-visual equipment and served as tutors. This invaluable assistance allowed the instructors to devote more time to special needs of individual students.

A core worktext series was used for each grade level of ABE along with suitable materials selected from a vast array of supplementary programs. Available for use were audio-cassette tapes with corresponding workbooks, boxed materials for mathematics, reading and study skills, anthologies, paperback books, and video tapes.

More specific diagnoses of GED students' strengths and weaknesses were determined by the *General Education Performance Index* (GEPI), Form A. This index provided information on the student's competency level for each of the subtests on the GED test. Instruction was then geared for the deficient areas; in most cases, English and mathematics. When the student and instructor determined that the student was ready to take the GED test, the GEPI, Form B was administered. If the student demonstrated an adequate performance level, he was permitted to take the GED test on the next scheduled testing date.

Flexibility in all aspects of the program was imperative to accommodate inmates' preferred learning modalities as well as their work schedules, medical appointments, and visitations.

Students in the Associate of Applied Science Degree program were enrolled in a four-hour self-paced course. Two texts were used: *Reading Faster and Understanding More* by Wanda Miller, and *The Now Student* by Edward Spargo. *The Nelson-Denny Reading Test*, Form D was administered as a pretest to determine reading strengths and weaknesses. Form C was used at the end of the quarter to determine gains.

The following comparisons were made between a group of students at the Federal Correctional Institution (FCI) and a group of students from the State Technical Institute (STIM). The total number of subjects was 56. The average age of the FCI student was 27 compared to an average age of 21 for the STIM student. Students from both Institutions held jobs at least half-time and all students in these classes were high school graduates. Among the FCI subjects, there were 14 black and 14 white students. Sixteen black and 12 white students made up the STIM group.

The *Nelson-Denny* Pretest and Posttest mean scores are reported in Table I. The pretest vocabulary mean score for FCI students was 30 compared to a mean score of 16 for STIM students. With the alpha level set at .05, these

scores were subjected to an analysis of variance. The F ratio proved to be significant. (Table II)

Comprehension pretest scores indicated a mean score of 35 for FCI students and 27 for STIM students. The analysis of variance for the comprehension pretest showed a significant difference in favor of the FCI students' performance (Table III)

The *Nelson-Denny* Posttest scores indicated a slight improvement in performance for both groups. The mean vocabulary score for the FCI students rose to 37 and the mean vocabulary score for STIM students rose to 19. The analysis of variance indicated a significant difference between the two groups of students still apparent in vocabulary performance. (Table IV)

However, mean scores for the Comprehension Posttest were 37 for FCI students and 32 for STIM students. The analysis of variance revealed that the performance levels of the comprehension posttest did not differ significantly. (Table V)

The correlations between age and the vocabulary and comprehension scores (both pretest and posttest) were so small that age could not be considered a significant determining factor in the scores of the dependent variables. (Table VI)

Table I

Nelson-Denny Reading Test Scores

		Pretest		Posttest	
Vocabulary	N	Mean	S.D.	Mean	S.D.
FCI	28	29.571	21.155	37.000	23.112
STIM	28	15.536	8.452	19.010	6.713
Comprehension					
FCI	28	34.500	14.305	36.857	12.406
STIM	28	26.714	10.201	31.643	9.318

Table II

Vocabulary Pretest

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Probability of F
Between Groups	2758.018	1	2758.018	10.629	.002*
Within Groups	14011.82	54	259.4782		
Total	16769.84	55			

Table III

Comprehension Pretest

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Probability of F
Between Groups	848.6428	1	848.6428	5.498	.023*
Within Groups	8334.714	54	154.3466		
Total	9183.357	55			

Table IV

Vocabulary Posttest

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Probability of F
Between Groups	4736.160	1	4736.160	16.359	.001*
Within Groups	15638.68	54	289.6052		
Total	20374.84	55			

Table V

Comprehension Posttest

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Probability of F
Between Groups	380.6428	1	380.6428	3.162	.081
Within Groups	6499.857	54	120.3677		
Total	6880.500	55			

Table V.

Correlation Matrix-Pearson Product-Moment Coefficients

	Age	Vocabulary (Pre)	Comprehension (Pre)	Vocabulary (Post)	Comprehension (Post)
Age	1	.09	.04	.09	-.07
Vocabulary (Pre)	--	1	.68*	.83*	.72*
Comprehension (Pre)	--	--	1	.61*	.78*
Vocabulary (Post)	--	--	--	1	.74*
Comprehension (Post)	--	--	--	--	1

*Correlations significant beyond the 0.05 level

Conclusion

Glaser (2) and Alper (1) have both reported evidence of a favorable impact from correctional education. However, Glaser cited four major needs of correctional education: (a) to challenge students who have been frustrated or bored with previous schooling; (b) to change the social relationships usually associated with schooling; (c) to remain honest in reporting educational achievements of inmates; and (d) to conduct research. (2)

Marsh has indicated that correctional education needs professional status: personnel certification, accreditation by regional agencies, and teacher education programs on correctional education. Moreover, he stated that the achievement of professional status with all its implications is the resource with the greatest potential for a major breakthrough in penal institutions. (3) This is a challenge to reading specialists to become concerned and involved in correctional education.

REFERENCES

1. Alper, B. *Prisons inside out.* Cambridge, Massachusetts; Ballinger Publishing Company, 1974.
2. Glaser, D. The effectiveness of correctional education, *American Journal of Correction,* 1966, 28, 4-9.
3. Marsh, J. Professionalism and correctional education, *Journal of Correctional Education,* 1972, 24:25.
4. Reagen, M. and Stroughton, D. (Ed.) *School behind bars: a descriptive overview of correctional education in the American prison system.* Metuchen, New Jersey: The Scarecrow Press, Inc., 1976.
5. Roberts, A. (Ed.) *Readings in prison education.* Springfield, Illinois: Charles C. Thomas, 1973.

ABSTRACT

TIME MANAGEMENT TECHNIQUES FOR RETURNING WOMEN

Susan Brown and Karen G. Smith*
New Mexico State University

Women who are returning to school after an absence often have fa... · and home responsibilities in addition to thei· responsibilities as a student. It is not uncommon for them to feel guilty about the "burden" that their school attendance will cause to their families. A frequent reaction is to overcompensate b· ttempting to handle all of their previous responsibilities in the same manner that they had handled them before and, in addition, meet their new responsibilites as a student.

The transition from home to the university environment can be facilitated through activities designed to help women establish goals, set priorities, analyze time use, discover ways to delegate responsibilities, and become aware of short cuts to manage time. Learning Assistance personnel can be vital forces in helping women coordinate family life with their added school responsibilities. Unless this coordination takes place, it is difficult for returning women to be efficient and successful students.

*Susan Brown, *University Drop-In Lab, Box 5278, New Mexico State University, Las Cruces, New Mexico 88003*

ABSTRACT

THE SELECTION AND TRAINING OF STUDENT PARAPROFESSIONALS IN A LEARNING ASSISTANCE CENTER

D. Johnson , R. Roy and C. Witherspoon*
Southwest Texas State University

Student paraprofessionals can enormously increase the scope and effectiveness of a learning assistance center. This article outlines the duties and responsibilities of student paraprofessionals in one learning assistance center and investigates the critical differences in the selection and the training between a student paraprofessional staff and a professional staff. Intangible qualifications such as interpersonal skills are more important than GPA. The experienced student paraprofessionals participate in an innovative selection process wherein they help choose the new paraprofessionals. Training is extensive and continuous, involving workshops, seminars, and on-the-job training. A useful bibliography is included.

*D. Johnson, *Southwest Texas State University, San Marcos, Texas, 78666.*

ABSTRACT

ONE-TO-ONE: AN INDIVIDUALIZED APPROACH TO DEVELOPMENTAL WRITING

Patricia M.F. Johnson and Shirley D. Sykes*
San Diego State University

Frustrated by earlier attempts to teach developmental writing skills, we have successfully adopted a one-to-one conference technique, a modification of one presented by Roger Garrison in "One-to-One: Tutorial Instruction in Freshman Composition," *New Directions for Community Colleges*, Spring 1974, 2, 55-83.

The essence of our class is the one-to-one conference, at which we see the student's paper *for the first time*. The conference creates an atmosphere ideally suited to spontaneous student-teacher discussion. The major aim of such discussion is to encourage the student to discover his writing identity — self-directed critic and editor, as opposed to outer-directed automaton; active creator rather than passive copyist. The student assumes full responsibility for his work, discovering through a kind of Socratic questioning his purpose in writing, his audience, and his need for forms as communication signals.

As editors and guides rather than judges, we use a system of priorities to govern our responses to each essay: content, point of view, organization, sentence structure, and diction. We do not mark the papers; rather, the student quickly learns to listen, question, argue, and take notes. Each paper is revised until it is of at least "C" quality, and the revisions are the student's own, not slavish imitations of material suggested by us.

The unique advantages of this approach are: for the student, a non-threatening atmosphere as a result of the close student-teacher relationship; for the teacher, continually renewed interest in the student and *no papers to take home*.

*Patricia M.F. Johnson, *Study Skills Center, San Diego State University, San Diego, California 92182*

ABSTRACT

USING A GROUP JIGSAW TECHNIQUE TO TEACH DEVELOPMENTAL READING SKILLS

Norma V. Spalding*
San Jose State University

Funded by the Chancellor's Innovative funds, a Reading Assistance Program brought together Reading Specialist Credential candidates, Bilingual-Multicultural Credential candidates, and Educational Counseling candidates as tutors and teaching assistants for students from the Educational Opportunity Program (EOP), University Alternative Program (UAP) and under the direction of Norma V. Spalding, Ed.D., Project Aspire. The Reading Laboratory coordinated the program whose purpose was to improve the reading skills of students disadvantaged by inadequate schooling or language differences. The method used was a jigsaw technique in which each student was given a piece of learning puzzle and for which he was valued by the others. Samples of techniques for teaching organization of writing and developing vocabulary skills are included.

Evaluation of the Reading Assistance Program Scores for Fall, 1977 demonstrated a significant improvement in reading grade level in pre and post test data. The Paired t Statistics Test resulted in $t = 12.89$, which is significant at $p > .01$.

*Norma V. Spalding, *Associate Professor, Special Education, San Jose State University, San Jose, California 95192*

ABSTRACT

REPORT ON AN ADJUNCT COURSE TO INTEGRATE READING AND STUDY SKILLS IN A UNIVERSITY ACADEMIC CLASS

Margaret Mary Wilson*
University of California Los Angeles

In the Winter Quarter of 1977 the UCLA Learning Skills Center offered a study skills program as an adjunct to a lower division history course. This no credit-no grade program gave students an extended opportunity to apply study strategies to their own material.

Of 82 applicants, 32 randomly selected students participated in 13 one hour sessions devoted to activities for improving their learning process. A remaining 46 were identified as a Control Group for grade achievement comparison. The instructional program included techniques for careful reading, rapid reading, lecture note-making, identification of course concepts and exam preparation. Goals of the program were that students should learn and use these strategies, that they should at the same time increase their understanding of themselves as students, and that they should realize the value of working in small groups with others enrolled in the same academic course.

Responses to an evaluation instrument and a questionnaire administered at the end of the program, plus a questionnaire mailed nine weeks later verified achievement of these goals.

Examination of final grades of pilot and control groups indicated that any grade differences between the two were probably the result of chance fluctuation. A further comparison of the records of 11 students who attended 10 or more of the 13 sessions, however, revealed a significant grade difference.

Another result of the program was its impact upon the History Department. The department offered a discussion section for an upper division course that presented study strategies with the content. While training the teaching assistant, the Center encouraged him to emphasize in his instruction writing techniques and time management.

*Margaret Mary Wilson, *Learning Skills Center, Room 271, Dodd Hall, University of California Los Angeles, California 90024*

Other WCRA Annual Conference Proceedings available:

Fourth Proceedings: *Interdisciplinary Aspects of Reading Instruction* $5.00

Fifth Proceedings: *Reading: Putting All the Cards on the Table* $5.00

Sixth Proceedings: *Technological Alternatives in Learning* $5.00

Seventh Proceedings: *Reading: Update – From Ideals to Reality* $6.00

Eighth Proceedings: *College Reading Skills: Today and Tomorrowland* $7.00

Ninth Proceedings: *The Spirit of '76: Revolution in College Learning Skills* $7.00

Tenth Proceedings: *Personalizing Learning Systems: Ecologies and Strategies* $7.00

Order *Proceedings* from:

Gwyn Enright, Editor
WCRA Proceedings
San Diego City College
1313 12th Avenue
San Diego, CA 92101

Make checks payable to the Western College Reading Association.

© Copyright 1978 by Western College Reading Association